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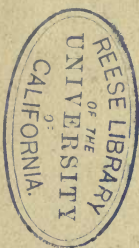
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ICHTHYOLOGY.



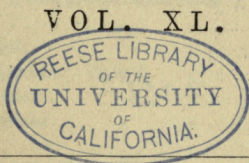
Indians Catching the Gymnotus.

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ICHTHYOLOGY.
FISHES OF BRITISH GUIANA—PART II.
BY R. H. SCHOMBURGK, Esq.

EDINBURGH :
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ENTOMOLOGY

LISTS OF BRITISH COLEOPTERA PART II.

BY A. M. COCKERELL, ESQ.

LENDING

25, ST. JAMES'S SQUARE

LONDON

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In all Thirty-two Plates in this Volume.

MEMOIR OF BURCKHARDT.

[A Crickton]

MEMOIR OF BURCKHARDT.



JOHN LEWIS BURCKHARDT, the celebrated Oriental traveller, although a foreigner by birth, is so intimately associated with the exertions of British enterprise in the cause of physical and geographical discovery, that England may justly claim him as her adopted son. Although not professedly a naturalist, yet his labours, like those of Bruce, the explorer of the Nile, have indirectly contributed to the advancement of natural science, and established a claim for him to have his name enrolled among those eminent men whose lives have been exclusively or professionally devoted to scientific pursuits.

Mr. Burckhardt was descended from a highly respectable Swiss family, and born at Lausanne in 1784. He was the eighth child of Colonel John Rodolph Burckhardt, commonly called Burckhardt of Kirshgarten, from the name of his mansion in the city of Basle, where his ancestors had long resided. Until the unprovoked invasion of Switzerland by the Republican arms of France, there was

no country in Europe in which happiness and contentment more generally prevailed among the inhabitants; for notwithstanding the variety of governments and independent commonwealths within that small territory, a mild spirit of liberty pervaded their several constitutions; the property of the subject was secured against every kind of violation; and so little were the people actuated by the spirit of conquest, that from the establishment of their general Confederacy until the disastrous epoch referred to, they scarcely ever found occasion to oppose a foreign enemy, and had no commotions among themselves except such as were easily terminated by the authority of the Helvetic Union.

Such was the fortunate and peaceful condition of the Swiss cantons when Burckhardt of Kirshgarten began life. His prospects, however, were soon blighted by the desolating hurricane of the French revolution, from the very commencement of which he became involved in a series of difficulties and dangers which at one time had nearly brought him to the scaffold. The aggressions of France upon the Austrian dominions kindled a war which spread its ravages along the Rhine and beyond the Alps as far as the Po. After five successive campaigns, the Imperial legions were driven from the field with the loss of the Netherlands and Northern Italy, where Bonaparte had given proof of his extraordinary military talents by defeating in almost every encounter the bravest troops and the best generals of the Emperor.

It was at the close of this war, in 1796-97, that Colonel Burckhardt found himself marked out as one of the many victims that were sacrificed to the demon of revolutionary fury. On the accusation of having been concerned in betraying the *tête-du-pont* at Huningen, near Basle, to the Austrians, when they besieged that fortress, he was tried for his life by the French party in his native city; and although in consequence of the undoubted proofs of his innocence adduced in court he was released from prison, he found it impossible to remain in the power of his enemies, having certain information that he was among the number of those who were to be destroyed either by secret machination or open violence. Quitting his paternal mansion, where he could no longer reside in safety, he entered into a Swiss corps in English pay; but was under the necessity of leaving his wife and children at Basle, to save the family, if possible, from total ruin.

In this forlorn situation, his son John Lewis became a daily witness of the miseries which the country suffered from the devastations of the French Republicans. The effect of these distressing scenes was to inspire him, at a very early age, with a detestation of their principles, and a resolution never to live under their yoke. So deeply rooted was his abhorrence of their revolutionary doctrines, that he longed to serve in the army of some nation which should be at war with France; but at his youthful period of life it was necessary first to complete his education, which, with the exception of two years

in an establishment at Neuchatel, had been hitherto conducted under the care of a domestic tutor residing in the family.

In 1800, our traveller, having then reached the age of sixteen, was carried by his father to the University of Leipzig; and from thence, after a stay of nearly four years, he was removed to Göttingen. In both places, his exemplary conduct and high sense of honour, his distinguished talents and ardent zeal for knowledge, insured him universal respect and esteem; while a remarkable frankness, cheerfulness, kindness, and equanimity of temper, made him particularly beloved by his more intimate associates. After leaving Göttingen in 1805, he returned to his father, and also paid a short visit to his mother, who still remained at Basle. The state of Europe at that time was such as to hold out but small chance of enabling him to gratify his military propensities. There was scarcely a nation on the continent which was not either subject to the French, or in alliance with them; and for this reason he declined an offer to engage in a diplomatic mission, made to him by one of the royal courts of Germany.

Uncertain what plan to pursue, he at length resolved upon proceeding to England, in the hope of meeting some employment congenial to his wishes in the service of this country. In the month of July, 1806, he arrived in London, bringing with him several excellent letters of introduction, among which was one from the celebrated Blumenbach,

Professor of Natural History at Göttingen, to Sir Joseph Banks, President of the Royal Society, and one of the most active members of the committee of the Association for promoting discovery in the interior of Africa. This accidental circumstance gave a new impulse to the enterprising genius of Burckhardt, and determined the future course of his life.

A desire to explore Africa had at an early period turned the attention of European nations to that unknown portion of the globe. At first these adventurers were satisfied with making discoveries along the western coasts; but hearing afterwards of the golden treasures stored in the markets of Timbuctoo, they directed their researches towards the central region, in the hope of penetrating to that mysterious El Dorado of the desert. Portugal, for a certain time, took the lead in the career of maritime and commercial enterprise, and was foremost in the grand movement which took place about the end of the fifteenth century in behalf of science, civilisation, religion, and industry. Its local position, its wars and expeditions against Morocco, naturally pointed out the western shores of Africa as the best field for the discovery; and in a short time the fertile districts watered by the Senegal and the Gambia were reached by the Portuguese navigators.

Their progress gradually extended to the Gold Coast in 1471, and thence to the Congo River, which they ascended, and opened a friendly inter-

course with the natives ; the king submitting to the rite of baptism, and allowing free scope to the Catholic missionaries to erect churches and labour in the conversion of his subjects. According to some accounts, their ambassadors penetrated as far as Timbuctoo, not in quest of worldly riches, but in prosecuting their indefatigable efforts to trace the abode of Prester John. If this adventurous journey failed in its pious object, it gained the Portuguese a more complete knowledge of Central Africa than was ever attained in Europe until a very recent period. Most of this intelligence, however, has either perished, or still remains locked up in the national archives.

The Dutch, who had risen in the seventeenth century to the first rank as a naval power, next became masters of the trade and settlements of the western coasts ; but they were soon dispossessed by their successful rivals, the French and English, whose avarice was doubly stimulated by the flattering reports, then prevalent in Europe, of the magnitude of the gold trade carried on at Timbuctoo and along the Niger, which was represented as surpassing in value the dazzling treasures of Mexico and Peru.

According to all the geographical systems of that age, the great river Niger, which watered the interior of the continent and carried vast quantities of that precious metal in its alluvion, was understood to empty itself into the Atlantic Ocean either by the Senegal or Gambia, or both. Hence by ascend-

ing either of those streams, it was deemed possible to reach the golden city of the wilderness, whose wealth was considered full compensation for all the dangers and fatigues to be encountered in approaching it. The accomplishment of this object became a favourite enterprise with several European nations.

In 1618, an English company was formed for exploring the Gambia; and that same year, Mr. Richard Thompson was sent out with a vessel of 120 tons, and a cargo worth nearly £2000 sterling. This expedition, however, and several others which followed, proved unsuccessful, and led to nothing but a better acquaintance with the inhabitants, animals, and productions of these hitherto unknown countries. The only gold heard of, existed in the descriptions of the natives, in mines which nobody has yet discovered, or on the roofs of cities which always happened to lie three or four months' journey into the interior.

Whilst the English sought to penetrate to Timbuctoo by ascending the Gambia, the Senegal was the branch which the French identified with the Niger, and by which they endeavoured to attain the same object. About the year 1626 they founded the settlement of St. Louis at the mouth of that river, and this, until lately, continued to be the capital of their possessions in Africa. M. Jannequin, the Sieur Brue, and some other adventurers, explored the country to the distance of four hundred miles from the coast, and these efforts were conti-

nued at intervals till the close of the seventeenth century. The only geographical fact of any importance, if it deserve the name, was a report that the Niger did not flow westward by the two separate channels of the Gambia and the Senegal, but was distinct from both these rivers, and passed eastward beyond Timbuctoo. This opinion, now found to be the more correct theory, was adopted by the learned geographers Delille and D'Anville, although a contrary belief continued until within these last few years to prevail generally among the learned in Europe.

The imperfect success which had attended these earlier attempts to penetrate the interior of Africa, and the unseemly blank which still covered the map of that vast continent, at length roused the attention of several public-spirited individuals in London, who considered it discreditable to a great maritime and commercial nation, as well as to the sciences upon which the extension of geographical knowledge depends, that a country so interesting, and opening up apparently so many new channels for trade, should be allowed to remain a sort of *terra incognita*, whilst the remotest extremities of land and sea in other quarters of the world had been reached and explored by British enterprise.

Accordingly, in the year 1788, the individuals referred to, with a view to remove this reproach, formed themselves into a Society called the African Association, for the purpose of promoting discoveries in the interior of that extensive continent.

They subscribed the necessary funds, and sought out persons duly qualified and possessed of sufficient courage to undertake such distant and perilous missions. A committee, which afterwards embraced several noblemen, clergymen, members of parliament, and men of science, was appointed ; consisting of Lord Rawdon (afterwards Marquis of Hastings), Sir Joseph Banks, the Bishop of Llandaff, Mr. Beaufoy, and Mr. Stuart, who were nominated managers.

It might be supposed that the mere offer to defray travelling expenses, which was all the Society's finances could afford, would be no great temptation to induce persons endowed with the requisite qualifications to embark in journeys beset with dangers and difficulties of no ordinary kind. Yet it so happened, that men eminently fitted for the task presented themselves, even in greater numbers than the Association could receive. It is true, that for some time the progress of discovery, from various unfortunate accidents, was not at all commensurate with the alacrity or the ability evinced by those ardent adventurers who engaged in pursuit of this very important object. Ledyard, the first that offered his services, sailed for Cairo, where he arrived on the 19th of August, 1788, intending to proceed to Sennaar, and thence to traverse the entire breadth of the African continent. But he died in Egypt, before the caravan was ready to start, with which he had proposed to take his departure.

The Society next entered into terms with Mr.

Lucas, who had instructions to take the most direct route from Tripoli into the interior; but the rebellious state of the Arabs obliged him to return, and he made no farther efforts to prosecute his journey. The expedition of Major Houghton, who undertook the attempt to reach the Niger by travelling along the banks of the Gambia, was not more fortunate; and on being informed of his death, the Association accepted the proffered services of Mungo Park, one of the most courageous and persevering adventurers that ever set foot in Africa. He set out on his first journey in May 1795, and returned in the beginning of 1798, with the reputation of having made more splendid discoveries than any of his predecessors. His second attempt, which was in 1805, was on a larger scale; but it proved his last, and several years elapsed before any certain tidings of his fate reached Europe.

Meantime, however, the field of African exploration had been occupied with other adventurers, under the auspices of the Association. Frederic Horneman, a student of the University of Gottingen, having been strongly recommended to Sir Joseph Banks by Professor Blumenbach, was despatched in 1797 to Egypt, having previously qualified himself by a competent knowledge of the Arabic language, and acquiring such other accomplishments as were fitted to support the character which he intended to assume, of an Arab and a Mussulman, under which disguise he hoped to elude the effects of that ferocious bigotry which had opposed so

fatal a bar to the progress of his predecessors. He reached Egypt in September 1797, and next year, having proceeded westward with the caravan for Fezzan, he visited Siwah, Mourzouk, and Tripoli. In 1800, he directed his course southward, and for two years no accounts of him were received by the African Association. In 1803, it was reported he was residing in safety at Kashna, but Major Denham afterwards learned that he had fallen a victim to the climate, after penetrating as far as Nyffe on the Niger, which he was erroneously informed by the Arabs flowed into the White River, the main artery of the Nile.

The Society found others willing to undertake the perilous experiment of African discovery. Mr. Nicholls, in 1804, had to make his way into the interior from the Gulf of Benin; while another German, named Roentgen, also recommended by Professor Blumenbach, chose the route by Morocco; but both died at the very commencement of their journey.

It is not connected with our purpose to give any account of the numerous subsequent adventurers who embarked in the same enterprise, either under the auspices of the Society or in expeditions fitted out by the British government. The successive attempts made by Riley, Tuckey, Campbell, Laing, Gray, Ritchie, Lyon, Denham, Oudney, Clapperton, and the Landers, although directed to the same object, were applied to regions very different from those explored with so much success by the individual who forms the subject of this Memoir.

At the time when Burckhardt arrived in London, and was introduced to Sir Joseph Banks, the African Association had begun to despair of any farther intelligence from Mr. Horneman, and in course of the following year they received notice of the death of Mr. Henry Nicholls at Old Calabar, in the bight of Benin. The result of the information which they had obtained from those travellers who had examined the western parts of Africa, as compared with that transmitted by Mr. Horneman from the east, had now rendered it advisable to make a new attempt in the latter direction. These wishes of the Association soon became known to Burckhardt, through his acquaintance with some of the leading members. To a mind like his, equally characterised by courage, a love of science, and a spirit of enterprise, such an undertaking held out peculiar attractions, and accordingly it was not long before he had made an offer of his services to Sir Joseph Banks and the Rev. Dr. Hamilton, who was at that time treasurer and acting secretary of the Association.

This latter gentleman, perceiving him to be undismayed by the strong representations of danger which he considered it right to make to a person of Burckhardt's birth and education, and having found him admirably adapted to the task by his natural and acquired attainments, as well as by the vigour of his constitution, laid his proposal before the Association at their next general meeting in May 1808; the offer was willingly accepted, and on the

25th of January, 1809, our traveller received his instructions, having diligently employed the interval in London and Cambridge in the study of the Arabic tongue, and of those branches of science which were most necessary to discharge with success the duties he was about to undertake. He attended lectures on chemistry, astronomy, mineralogy, medicine, and surgery; and in the intervals of his studies, he exercised himself by long journeys on foot, bare-headed, in the heat of the sun, sleeping on the ground, and living upon vegetables and water. To personate the Mussulman still more nearly, he allowed his beard to grow, and assumed the Oriental dress.

As an intimate knowledge of Arabic was the most important acquirement of all, Burckhardt was instructed to proceed in the first instance to Syria, where at the same time that he studied the language in one of its purest schools, he might accustom himself to the habits and manners of the people he was to mix with, at a distance from those countries which was to be the scene of his researches, and consequently without much risk of being afterwards recognised. After sojourning two years in Syria, he was instructed to proceed to Cairo, and thence, accompanying the Fezzan caravan to Mourzouk by the same route which Horneman had pursued, he was directed to make that town the point of his departure for the interior countries.

On the 2d of March, 1809, Burckhardt sailed from Cowes on board of a merchant ship proceeding

with the convoy to the Mediterranean ; and about the middle of April he arrived at Malta. While there, he received intelligence of Dr. Seetzen, a German physician, who had been sent a few years before that period by the Duke of Saxe-Gotha into the Levant to collect manuscripts and Eastern curiosities. This accomplished traveller had resided for some time at Constantinople, Smyrna, Aleppo, Damascus, and Cairo ; and in course of his wanderings had collected about fifteen hundred manuscripts and three thousand objects of antiquity which he had sent to his native place. It appeared that his design at that time was to proceed from Suez down the Red Sea, with a view to explore the interior of Africa, so that Burckhardt considered him as a rival ; but his schemes were frustrated by his premature death, and all that has been published of his travels is a short correspondence between him and M. de Zach of Saxe-Gotha, which was translated and printed by the Palestine Association in 1810.

Burckhardt sojourned seven weeks at Malta, during which he succeeded in equipping himself thoroughly in the Oriental fashion. In a letter to Sir Joseph Banks, dated 22d May, 1809, he states that the dress he had assumed was somewhat Syrian, yet sufficiently differing from the real Syrian costume to show that he had no wish to pass for a native. He continued to practise the speaking of Arabic, and was careful to live retired, for fear of being recognised and detected. He especially avoided

all intercourse with the Moors and natives of Barbary; merely giving them the "Salaam Aleikum" (peace be with you) when passing them in the street. There happened to be a Swiss regiment in the English service stationed in garrison there, to many of the officers of which he was personally known, but he had the satisfaction to find that his object and destination had not transpired.

From Malta our traveller next proceeded to Aleppo as an Indian Mahommedan merchant, the supposed bearer of despatches to Mr. Barker, British consul there, and agent to the East India Company. The assumption of this character he thought would be an excuse for his singularity in speech and manners, besides being a protection on the road, and enabling him to escape the exactions of the custom-house officers.

The person to whom Mr. Burckhardt was recommended was a Greek, acting as British consul at Cyprus; and accordingly, about the middle of June, he took his passage on board of a ship bound for that island; but as the owner afterwards changed his mind as to his destination, our traveller proceeded in another vessel bound for Acre, and uncertain whether he should touch at Cyprus. Another letter of recommendation was procured to a merchant at Acre, with a second for the Pasha, should it be required. Scarcely, however, had the ship quitted Malta, when Burckhardt was informed that his real destination was the coast of Caramania, in Asia Minor; that if grain could be purchased

at an advantageous price at the ports of Natolia or Tarsus, then only would she proceed to Acre.

Finding complaints and remonstrances in vain, Burckhardt endavoured to make himself as comfortable as he could, and studied to cultivate the good graces of his fellow travellers. He introduced himself among them as an Indian Mahommedan merchant, who had lived from his early years in England, and was now on his way home; a story which appeared credible enough to the passengers, as well as to the ship's company. Numerous questions were put relative to India; and whenever he was called for a specimen of the Hindu language, he answered in the worst dialect of the Swiss-German, which in its guttural sounds rivalled the harshest utterance of Arabic.

Every evening, they assembled upon deck to smoke their pipes and enjoy the cooling sea-breeze. Story-telling was their principal amusement, and of course our traveller was called upon to narrate to his companions the wonders of the farthest east,—of the Great Mogul, and the riches of his court,—of the *suttees*, or widows burning themselves,—of the Chinese wall, the great porcelain tower, &c. A Tripolitan merchant, in his turn, recounted the wonders of Soudan,—of one nation continually at war with its neighbours,—of a nation of speaking sheep,—of another of necromancers, who had lately defeated a whole army which the King of Bornou sent against them. In course of these conversations, Burckhardt learned with certainty that the yearly

caravan intercourse between Fezzan and Tripoli was still uninterrupted, although the pilgrims from Fezzan to Cairo and Mecca had suffered considerable inconvenience in consequence of the irruptions of the Wahabis, with whom the Pasha of Egypt was then at war. In this manner the time passed agreeably enough. On the 15th, the ship made Candia; on the 17th, Rhodes was seen at a great distance; and on the 19th, they anchored in the port of Satalia.

This part of the coast of Caramania is rough and precipitous; the highest ridges of the mountains were covered with snow; they were quite barren, resembling in their shape and aspect the African mountains in the Strait of Gibraltar. The town is built partly on a cliff, and partly on the plain behind it, with gardens extending three or four miles along the shore. As the plague then raged in that quarter, they did not land, but departed the same evening; and after sailing for three days along the Caramanian coast, which was bounded all the way with a chain of snowy mountains, they anchored on the 26th at Mersin, about fourteen miles to the west of Tarsus. The inhabitants are principally Greeks and Turks, governed by an Aga, who appoints subordinate rulers to collect the revenue, which the chiefs and the Aga divide equally between them.

At Tarsus, which was seen at a distance by its groups of trees, the travellers met with a kind reception. "Peace be with you,"—"You are wel-

come among us,"—"God send you a happy evening," &c., were compliments which hailed them from every quarter. The rich merchants treated them with coffee, ice-water, and *bour*, which is a drink made of water mixed with the juice of liquorice. A musician sung some Turkish airs, accompanying himself upon a sort of mandoline. The inhabitants, though strict Mussulmans, were careless of their religious duties, and showed a great indifference to the precepts of the Koran. The place is mean in appearance, and its trade inconsiderable, being sadly fallen off since the days of Jonah and Ezekiel.

On the 2d of July, Burckhardt took his passage to Latikia on board an open vessel, resembling those that ply on the Nile, of which Bruce and other travellers have given descriptions. At Suedieh he had the satisfaction to fall in with a caravan from Aleppo, which had come down to the coast with Indian goods. He soon formed an acquaintance with the muleteers, and bargained with one of them for the whole journey. Antakia (Antioch) lay at no great distance, the road to which passed through a country famous for the beauties of its landscape scenery. That ancient capital of the Greek emperors is situate very picturesquely in a plain encompassed with two chains of mountains, and surrounded with gardens and well cultivated fields. A strong-built bridge leads across the Orontes immediately into the town.

Instead of going to the khan of the merchants,

where he had nobody to introduce him, Burckhardt preferred accompanying his guides to the khan of the muleteers, which was a large court-yard of a triangular shape, one side being occupied with stables, another was used by the muleteers for the purposes of eating, sleeping, and praying, while the third was distributed into small dark cells, which served as magazines for the goods, places for working in, &c. In the middle of the area was a large water-basin, which afforded drink to men and beasts indiscriminately.

The appearance of a stranger excited considerable curiosity, and the little cell of which he took possession was speedily beset with troublesome inquirers, who unanimously declared that the intruder was a Frank, and had come to their country for evil purposes. The muleteer interfered; but his remonstrances were soon lost in the general cry of *Giaour!* (infidel), raised by the other inmates of the khan, and by the townspeople who had come to visit their friends. All endeavours at explanation were vain; Burckhardt evidently saw that their design was to make religion a pretext for extorting money from him. His property fortunately was mixed up with that of the consul, except a few trifling articles of luggage and a pocket purse containing the sum necessary for his daily expenses. The Aga of Antakia sent a dragoman to investigate the state of affairs, but his spirited conduct, and the success with which he concealed his Frank origin, prevented him from being made the victim of im-

position. During the whole four days that he was detained in the khan, the people who frequented it were constant in their imprecations against him; but at length the departure of the caravan (on the 10th) relieved him from his unpleasant situation.

The mode and time of removal must have presented a busy and picturesque scene. The whole area of the court was divided into small squares of different sizes, by means of cords, at the ends of which iron wedges were fastened, which were driven into the earth up to their heads. Each muleteer chooses one of these squares, proportionate in size to the number of his beasts, and loads them in it. Though the ropes are little more than one inch above ground, the animals never move out of the space assigned them; and thus great order prevailed, although it was dark when they loaded, and the whole court crowded with beasts and bales. At every place where they halt for feeding, the same cords are extended in front of the animals, to prevent their getting amongst the luggage.

The route of the caravan was across a plain country on the right bank of the Orontes, the breadth of which was about fifty yards, and its depth nowhere more than five feet. A journey of two days, and a passage over a range of calcareous mountains, brought them into the eastern plain of Syria. Up to this period, Burckhardt's companions had regarded him as an orthodox Mussulman; but two of them having kept a strict watch over all his movements and actions, pretended to discover some

irregularities in his evening ablutions. This real or fancied defect lost him the good opinion which by his manner and conduct he had hitherto maintained. He was told that he was "*haraam*," or in a forbidden unclean state, and in consequence he was subjected to considerable annoyance ; but it lasted only a single day, as they were now approaching the termination of their journey.

Over a wide extended plain rose the castle of Aleppo, at the sight of which the armed horsemen of the caravan set off in a gallop, repeatedly firing their muskets. Another hour's march, through deserted and ruined villages, brought them to the town ; on entering which all the merchandise must be weighed at the custom-house khan, in order to determine the sum due to the muleteer for freight, as also the amount of duty to be paid for them to the Grand Seignior. This city continued to be his principal residence during the two years and a half which he remained in Syria, chiefly for the purpose of learning to speak Arabic fluently.

A few days after his arrival he was attacked by a strong inflammatory fever, occasioned probably by the want of rest, owing to the quantity of vermin that had collected on his person. But in a fortnight his health was restored, and allowed him to proceed with his studies uninterrupted, with the aid of young Frank who spoke the language like a native, though he could neither read nor write it. Our traveller made rapid progress, making daily additions to his practical knowledge of Arabic, and his

experience of Oriental society and manners. He amused himself by attempting a translation, or rather a metamorphosis, of the story of Robinson Crusoe into an Eastern tale, under the title of *Deir el Bahr*, or the Pearl of the Seas. In common conversation he soon learned to comprehend almost any thing that was said, and was able to make himself understood on most subjects. He likewise formed an acquaintance with some sheikhs, and other literary characters amongst the Turks at Aleppo, who expressed their surprise that "a Frank should know more of their language than their first Ulemas!"—a compliment not particularly flattering, when we take into account the low state of learning among the Aleppine literati, few of whom could compose a line of prose or verse free from grammatical blunders.

Although Burckhardt still retained his fictitious name of Ibrahim ibn Abdallah, he found it no longer necessary to appear as a Mussulman, or to conceal his European origin, and wore only such a Turkish dress as is often assumed in Syria by English travellers. He had there the comfort of an unmolested intercourse with the Mahommedan population of the town; at the same time that he was not prevented from openly accepting the friendship and protection of Mr. Barker, the British consul, who received him at his house as a travelling merchant from his own country.

Besides the convenience of study and other advantages derived from a residence at Aleppo, he was

anxious still farther to extend his acquaintance with the natives by making occasional excursions into Syria, with a view to inspect the state of Arabian life and manners in the tent and the desert as well as in the crowded city. And while thus preparing himself for the ultimate object of his mission, he was careful to direct his journeys through the parts of the country which had been the least frequented by European travellers, so that he had thus the opportunity of making some important additions to our knowledge of those regions, of which the geography is not less interesting from its connexion with ancient history, than it is imperfect in consequence of the impediments which modern barbarism has opposed to scientific researches.

His first intention was to visit the extensive plains of the Haouran (the original patrimony of Abraham), where the Bedouin Arabs of the desert encamp in the spring and summer in search of grass and water for their cattle, or of corn for their winter supply. On the eve of his departure, it happened that an Arab sheikh or chief of the Aenezy tribe, the most powerful and warlike of their countrymen, had come to Aleppo for the purpose of receiving the passage duties on certain goods which were to be conveyed through his territory by the great caravan to Bagdad. With this chief Burckhardt formed an acquaintance, and engaged that he should accompany him by way of Tadmor or Palmyra, home to his family and tents; and having shown him the

encampments and horses of the Bedouins, he was to conduct him in safety to Damascus.

Although it is extremely rare for an Arab to break his word of honour with a stranger to whom he has promised his protection, this chief did not fulfil his agreement, having left his protegee on the third day in charge of some of his men near Hamah, where they were attacked and stript by a party of the Monali tribe, who had then a quarrel with the Aenezys. As a reason for this breach of contract, the sheikh alleged that he could not possibly carry him into his own country, as he was afraid of its being invaded by the approaching army of the Wahabis, a sect of religious reformers who had then nearly conquered the whole of Arabia, and were waging war against all Turks and Mussulmans who refused to adopt their creed. He offered, however, to provide him another guide who would conduct him to Tadmor and thence to the Haouran.

Having refitted himself at Hamah, our traveller set out under his new protector and succeeded in reaching Palmyra, where he spent nearly two days in contemplating those interesting ruins, and observing the manners of the Bedouins, who received him in their encampments with their characteristic hospitality and kindness. Here he was again deserted by his guide, and obliged to join a salt caravan, with which he proceeded to Damascus.

His project of visiting the Haouran was now found to be impracticable, in consequence of the

disturbances caused by the Wahabis, who for several years had interrupted the annual pilgrimages to Mecca, and occasioned a change in the government of Damascus, where Yussef Pasha, who had been appointed in 1806, was deposed for appropriating the greater part of the *miri*, or land tax, to himself, instead of transmitting it to the Porte. His successor was Soliman, Pasha of Acre, who obtained his firman by remitting considerable sums of money to Constantinople, and promising to escort the pilgrim caravans; or should that be found impossible, to make regular payment of the *miri*, and at all events to send Yussef's accumulated treasures to the Grand Seignior. The new governor made his solemn entrance into Damascus on the 5th of August 1810 (only a few days before the arrival of Burckhardt), having then under his command three pashaliks,—Tripoli, Acre, and Damascus,—which gave him the possession of nearly all Syria, from Gaza to Antioch. The sudden changes and revolutions for which the policy of the Ottoman empire is so remarkable, suggested to the intelligent mind of Burckhardt the following very appropriate reflections as to their cause and consequences.

“ It is the misfortune of the Turkish government, at least in its present decayed state, that popular virtues in the person of its governors are quite incompatible with the Porte's own views. The Sultan demands supplies, and nothing but supplies; and the Pasha, to satisfy him, must press upon the industry of his subjects. He who is the well-wisher of his people,

who contents himself with the ordinary revenue, and who lets justice preside in his councils, will undoubtedly incur his sovereign's displeasure, not because he is just, but because his justice prevents him from plundering, and transmitting a portion of the acquired plunder to the Divan to save his existence; he has nothing left but silently to resign his unhappy subjects to the rod of a succeeding despot, or to declare himself a rebel and contend with his rival, until the Porte, convinced of the difficulty of deposing him, patiently waits for a more favourable opportunity of effecting her purpose. Her principles are applicable to all persons in office, from the Pasha down to the Sheikh of the smallest village; and it is to them that the rapid decay of Turkey is to be ascribed. It requires but one year's reign of a man like Djeddar to destroy the benefits of the four years' government of a Yussef. The rapidity, however, with which ease and wealth are seen to reflow into the re-opened channels of industry, proves that Syria, on the downfall of the Turkish empire, would soon regain its former lustre."

The unsettled state of the government having obliged our traveller to prolong his stay at Damascus for more than six weeks, he resolved again to visit Baalbec and the Libanus, taking his departure about the middle of September, with a small caravan destined for Tripoli. His route lay through Zahle, a small town on the western side of the valley Bekaa, near which is a ruined mosque, believed by the Turks to contain the tomb of Noah. Bekaa is

the ancient Cœlo-Syria, and stretches between the two mountain chains of the Libanus and the Anti-Libanus.

At Baalbec Burckhardt remained three days, inspecting the ruins and copying inscriptions ; but the celebrated work of Wood and Dawkins, who visited the place in 1751, and the subsequent account given by Volney (in 1784), rendered it unnecessary for him to enter into any description of these magnificent architectural remains. Volney, he remarks, is incorrect in describing the rock of which the great temple is constructed, as granite ; it is of the primitive calcareous kind ; although in different parts there are fragments of granite columns to be found. Having lately visited Tadmor, he was naturally led to draw a comparison between those renowned monuments of antiquity. “ The entire view (says he) of the ruins of Palmyra, when seen at a certain distance, is infinitely more striking than that of Baalbec ; but there is not any one spot in the ruins of Tadmor so imposing as the interior view of the temple of Baalbec. The temple of the sun at Tadmor is upon a grander scale than that of Baalbec, but it is choked up with Arab houses, which admit only of a view of the building in detail. The architecture of Baalbec is richer than that of Tadmor.”

The walls of the ancient city may still be traced, forming a circuit of between three and four miles, and including a larger space than the present town ever occupied, even in its most flourishing condi-

tion. Many of the Damascenes choose their wives from Baalbec, the women of which are reckoned the handsomest of the neighbouring country. The surrounding district is well-watered and extremely fertile. The inhabitants fabricate white cotton cloth like that of Zahle, which is used for shirts, and when dyed blue, for *kombazes*, or gowns worn by the men. They have a few dyeing-houses, and had formerly some tanneries. The property of the people consists chiefly of cows, of which every house has ten or fifteen, besides goats and sheep. The goats are of a species not common in other parts of Syria, having long ears, large horns, and long hair, but not silky like that of the goats of Anatolia. The breed of Baalbec mules is much esteemed, some of them being reckoned worth £30 or £35 sterling.

The wandering Arabs, who visit the territory in quest of summer pasture, pay tribute to the Emir, at the rate of twelve or fifteen pounds of butter for each tent. In some parts the villagers cultivate tobacco, and rear the silk-worm. At Kanobin, the seat of the patriarch of the Maronites, the convent derives a considerable income from a custom which the peasants practise in winter, of suspending their silk-worms in bags before the portrait of some favourite saint, whose influence they implore for a plenteous harvest of silk,—not forgetting a suitable remuneration to make their prayers more acceptable.

The territory of Baalbec comprehends on the

eastern side the range of the Anti-Libanus, and on the western the Libanus, or Lebanon, as high as the summits. The whole of the rock is calcareous, and towards the top the surface is so splintered by the action of the atmosphere as to have the appearance of layers of slates. Of the famous cedars, so renowned in the days of Solomon, some specimens still exist, especially at the foot of the steep declivities of the higher division of the mountain. "They stand (says Burckhardt) on uneven ground, and form a small wood. Of the oldest and best-looking trees I counted eleven or twelve, twenty-five very large ones, about fifty of middling size, and more than three hundred smaller and young ones. The oldest are distinguished by having the foliage and small branches at the top only, and four, five, or seven trunks springing from one base." Some of these trunks are covered with the names of travellers and persons who have visited them, having dates marked of the seventeenth century.

Proceeding down the valley to the Druse territory of Hasbeya, a village at the foot of Jibel el Sheikh, or Mount Hesma, famous for its wells of *bitumen judaicum*, and for the cinnabar found near it, Burckhardt reached Banias, or Panias, which is classic ground, being the ancient Cæsaræa Philippi, and the Dan of the Jews; the neighbouring lake Houle is the Lacus Samachonitis. The most remarkable vestiges consist of an old castle, probably erected in the time of the crusades,—some remains of the temple of Augustus, built by Herod,—and

several caverns or niches hewn out of the face of the perpendicular rock, intended for the reception of idols or deities, one of which was occupied with a statue of Pan, as described by Josephus; and hence the appellations of Panias and Paneium given to the mountain.

In the vicinity are the ruins of the city of Bostra, sometimes confounded with Bosra in the Haouran; both of which are mentioned in the books of Moses. Lower down is the fertile plain of the Houle, watered by the rivers Banias and Hasbeya, or the Jordan. "The source of the Jordan (says Burckhardt), or Dhan, as it is here called, is at an hour and a quarter north-east from Banias. There are two springs near each other, whose waters unite immediately below. Both sources are on level ground, amongst rocks of tufwacke. The larger source soon forms a river twelve or fifteen yards across, which rushes rapidly over a stony bed into the lower plain." A very probable derivation of the word "Jordan" was suggested by the inhabitants. "I was told (continues Burckhardt) that the ancient name of the river Banias was Djour, which, added to the name of Dhan, made Jourdan. The more correct etymology is perhaps Or Dhan, in Hebrew, the river of Dan. Lower down, between Houle and the Lake Tabaria, it is called Orden by the natives; to the southward of the Tabaria it bears the name of Sherya, till it falls into the Dead Sea." This point was the limit of Burckhardt's first tour in the countries of the Liba-

nus and Anti-Libanus; he returned to Damascus by way of Katana, without meeting with any thing remarkable, if we except the Kaber Nimroud, a large heap of stones which tradition records as the tomb of Nimrod.

After a fortnight's repose, rendered necessary by fatigue and indisposition, our traveller set out on his excursion into the plain of the Haouran and the mountains of the Druses,—a region which scarcely any European had then visited. He assumed the dress of the inhabitants, composed of a *keffie*, and a sheep-skin over his shoulders. During a laborious journey of twenty-six days (from November 8th till December 4th), he explored the country as far as Bozra, entered the desert to the south-east of that city, and returned afterwards to Damascus, through the rocky district called El Ledja. “At every step (says he) I found vestiges of ancient cities, saw the remains of many temples, public edifices, and Greek churches; met at Shohla with a well-preserved amphitheatre, at other places with numbers of standing columns, and had opportunities of copying many Greek inscriptions, which may serve to throw some light on the history of this almost forgotten corner. The inscriptions are for the greater part of the Lower Empire, but some of the most elegant ruins have their inscriptions dated from the reigns of Trajan and Marcus Aurelius.”

At Shohla and Kanouat the architectural remains are very splendid. A stony district called the Szaffa, two or three days' journey in circumference, was

then used as a place of refuge by the Arabs who fled from the Pasha's troops, or from their pursuers in the desert. It had no water except the rain collected in the cisterns. There was only one entrance into it through a narrow pass, a cleft between high perpendicular rocks, not more than two yards in breadth, which none ever dared to enter as an enemy. When a tribe intend to remain in it a whole year, they sow as much wheat and barley as will serve them for that time on the spots within its precincts fit for cultivation.

The Ledja, which is from two to three days' journey in length by one in breadth, is also inhabited by small tribes of pastoral Arabs. It is a strange wilderness, whose stony soil is covered with heaps of rocks, amidst which are numerous small patches of meadow that afford excellent pasture for the cattle. There are no springs to be met with; but in winter, water collects in the *wadis* and *birkets*, or cisterns, where it is sometimes kept the whole summer. In the interior parts the rocks are in many places cleft asunder, so that the whole ridge appears shivered and in the act of falling down. The layers are generally horizontal, from six to eight feet or more in thickness, occasionally covering the hills and inclining to their curve, as appears from their fissures, which often traverse the rock from top to bottom. Having satisfied his curiosity, and made several important observations, both as to the geography and the inhabitants of that region, Burckhardt returned to Damascus, and thence by Homs and

Hamah to Aleppo, where he arrived on the 1st of January, 1811.

His journey to Baalbec had been undertaken more for his own private gratification than in the hope of gathering new information; but his tour into the Haouran opened up a new field of observation, the fruits of which were some valuable papers communicated to the committee of the African Association, containing a classification of the principal Arab tribes near the confines of Syria, and a treatise on the manners and customs of the Bedouins, giving very interesting details of their encampments, tents, dress, furniture, diet, arts, arms, industry, education, religion, and government.

With a view to render himself still more familiar with the manners and language of the Arabs, before proceeding into Egypt, he had requested of his employers in London to allow him six months in addition to the stipulated two years' residence in Syria, which was readily granted; and on coming back to Aleppo, he resumed his studies with increased ardour, in order to qualify him, not merely to speak, but to act as a Mussulman. In one of his letters, he writes, "I have completed the perusal of several of the best Arabic authors, in prose as well as poetry. I have read over the Koran twice, and have got by heart several of its chapters and many of its sentences. I am likewise nearly finishing a thorough course of the precepts of the Mahomedan religion, a learned Effendi having taken upon himself the task of explaining to me the book

of Ibrahim Halebi, on the religious laws of the 'Turks.'

Incessant rains and the turbulent state of the country prevented Burckhardt from undertaking an excursion, which he had long projected, into the desert towards the Euphrates. On the 14th of February, 1812, he left Aleppo, to make another journey to Damascus, through the valley of the Orontes and Mount Lebanon, taking the route of Hamah, and thence crossing to Tripoli, which he reached on the 3d of March. The Arabs along the Orontes rear large herds of buffaloes, which are of small size but very spirited. This animal, it appears, is no favourite with the Turks, amongst whom there is a common saying and a belief that the whole brute creation was converted by their Prophet to the true faith, except the wild boar and buffalo; and on this account both animals are often called *Christians*! As the flesh of the buffalo is much esteemed by the Turks, it seems difficult to account for this antipathy; Burckhardt suggests, as the only reason he could learn, that, like the hog, it has a habit of rolling in the mud, and of plunging into the marshy ponds, in the summer time, up to the very nose, which alone remains visible above the surface.

The city of Tripoli, called Torebolis by the Arabs, is built on the declivity of the lowest hills of the Libanus. Many parts of the town bear marks of the ages of the crusades, amongst which are several high arcades of Gothic architecture, under which

the streets run. The principal commerce is in silk, produced upon the mountains; the next chief article of exportation is sponges, which are procured on the sea-shore, the best being found at little depth of water. The territory of this Pashalik extends over the greater part of Mount Lebanon; the Pasha derives a considerable income from the duties levied on the peasants who rear silk-worms, and who are reckoned to pay about twenty or twenty-five per cent. each, estimated according to the annual produce of the worms. The taxes on the mulberry trees are calculated in proportion to those on the silk. After a pleasant sojourn of ten days at Tripoli, Burckhardt returned to Damascus, visiting on his way the mountainous district of Kesrouan, and its chief the Emir Beshir, who received him very politely, and spoke with the highest satisfaction of his alliance with Sir Sidney Smith, while commanding upon that coast, during the expedition to Egypt. Along this route, a considerable proportion of the inhabitants consists of that remarkable people the Druses, whose manners and habits are quite different from those of the Turks and Christians. They make a public profession of Mohammedanism, and perform the rites prescribed by that religion; but in private they curse the Prophet, indulge in wine, and eat food forbidden by the Koran. They have a special antipathy against the Franks, chiefly in consequence of a tradition current among them, that the Europeans will one day overthrow their commonwealth. This hatred

has been increased since the invasion of the French in 1800; and the most unpardonable insult which one Druse can offer to another is to say to him,—*Allah yelebesak baneila*, “May God put a hat on you!” They are licentious and vindictive, but hospitable to strangers and faithful to their promise. They seldom have more than one wife, but the obligation of the matrimonial tie is very slight, judging from the ease with which divorces are accomplished. It is a custom among them, that if the woman asks her husband’s permission to go out, and he says “Go,” without adding “and come back,” she is thereby divorced; nor can her husband recover her, even though it should be their mutual wish, until she is married again according to the Turkish forms, and divorced from her second husband.

Being now anxious to reach Damascus before the rain and snow rendered the journey over the mountains impracticable, Burckhardt took leave of the Emir, and arrived at the city on the 22d of March. His stay here was prolonged for nearly a month, in consequence of an unexpected change in the government by the dismissal of Soliman Pasha. Having determined, before finally leaving Syria, to visit the Haouran once more, in order to examine those parts which he had not been able to see during his first tour to that country, and particularly to explore the ruins of Djerash (*Gerasa*) and of Ammon (*Philadelphia*), in the ancient Decapolis, he set out on his journey as soon as the state of the Pashalik

was sufficiently tranquil to allow him to proceed with safety. He took with him a Damascene guide, who had been seventeen times to Mecca, was well acquainted with the Bedouins, inured to fatigue, and not indisposed to favour the object of the traveller.

At Berak he found two saltpetre manufactories; the article is procured by boiling the saline earth dug up among the ruins of the town and in the neighbouring plain. In finding out the productive spots, the inhabitants are guided by the appearance of the ground in the morning before sun-rise; and wherever it then appears most wet with dew, the soil beneath is found impregnated with salt. Passing along the eastern limit of the Ledja, he penetrated as far as Bostra, formerly the capital of Arabia Provincia, and still, including the ruins, the largest town in the Haouran. There are the remains of a splendid mosque, embellished with numerous elegant arabesque ornaments, and of a temple with some large Corinthian pillars, equalling in beauty of execution the finest of those at Baalbec or Palmyra. Of the vineyards, for which this city was famous even in the days of Moses, not a vestige remains.

Proceeding in a westerly direction, Burckhardt traversed the whole plain as far as the borders of Djolan, near the lake Tabaria. On this route he passed Mezareib, a small village with a castle and a pool of the clearest water, which is supposed to have been the site of Astaroth (Deut. i. 4., Josh. ix. 10),

the residence of Og, king of Bashan. It was on this route that he saw for the first time a swarm of locusts; so completely did they cover the surface of the ground, that his horse killed numbers of them at every step; and it was with the greatest difficulty that he could protect his face from their attacks. In Syria this species is called *djerad nedjdyat*, or flying locusts, to distinguish them from the *djerad dshhof*, or devouring locusts. The former have a yellow body, a gray breast, and wings of a dirty white, with gray spots. The latter have white wings and a whitish gray body. The flying kind are much less dreaded than the other, because they feed only on the leaves of trees and vegetables, sparing the wheat and barley. The Bedouins eat locusts, swallowing them entire. They are never served up as a dish; but every one takes a handful of them when hungry, out of a large sack, into which they are put, with the mixture of a little salt, after they have been dried in the sun, and roasted slightly upon the iron plate used for baking bread.

A journey of four days brought the traveller to Djerash, formerly one of the principal towns of the Decapolis, situated on a small river of the same name which empties itself into the Wadi Zerka, probably the Jabok of Scripture. The extent and magnificence of the ruins prove the importance and magnitude of that ancient city. The ground for three or four miles in circumference is strewn with fallen temples, broken capitals, rows of lofty columns, the remains of theatres, and aqueducts, &c., with

which the streets in many places are entirely blocked up.

It was Burckhardt's intention to visit Ammon, but from the terror of the Arabs no guide could be prevailed with to conduct him beyond the mountains of Balka. Disappointed in this expectation, he retraced his steps northward, reached the lower extremity of the lake Tabaria, examined the hot springs in that neighbourhood, and on the 9th of May arrived at Damascus. This excursion enabled him to collect some valuable observations on the political divisions of the country, as well as on the character and customs of the inhabitants of the Haouran.

The period of Burckhardt's experimental training in Syria having now come to a close, he made preparations for his immediate departure to Egypt. Wishing to obtain a better knowledge of the mountains to the east of the Jordan, and being still more desirous of visiting the almost unknown districts eastward of the Dead Sea, as well as of exploring the regions that lie between the latter and the Red Sea, he resolved to proceed to Cairo by that route, in preference to the direct road through Jerusalem and Gaza, where it was not probable he would obtain much information important for its novelty.

Although this deviation would retard his progress a little, he thought the delay would be more than compensated by the light which he expected to throw on the geography of those countries, which

so few Europeans were qualified to explore. "Knowing (says he) that my intended way led through a diversity of Bedouin tribes, I considered it advisable to equip myself in the simplest manner. I assumed the most common Bedouin dress, took no luggage with me, and mounted a mare that was not likely to excite the cupidity of the Arabs." On the second day he passed near the lower ridge of the Djibel el Sheikh, the Mount Hermon of the sacred writings, and crossed the Jordan, which here flows in a narrow bed and with a rapid stream. Next day he reached Szaffad, the ancient Japhat, a neatly built town, commanding an extensive view over the country towards Acre, and in clear weather the sea is visible from it. Descending the mountain, he came to a place of refreshment called the Khan Djob Yussef, or the Khan of Joseph's Well, where the natives show the pit into which they pretend that patriarch was let down by his brethren. It is in a small court-yard, and is about three feet in diameter, and at least thirty deep, the sides being lined with masonry. Both Turks and Christians hold it in great veneration. The former have a small chapel just by it, and caravan travellers seldom pass without saying a few prayers in honour of Yussef. The whole of the mountain in the vicinity is covered with large pieces of black stone, although the main body of the rock is calcareous; and to account for this, the inhabitants have a legend that the tears of Jacob, dropping on the ground while he was in search of his son, turned the white stones

black ; and hence they give them the name of " Jacob's tears."

At a short distance are the town and lake of Tabaria, of which Burckhardt has given an interesting description. Tabaria is a walled town, with about four thousand inhabitants, consisting of Jews, Turks, and a few Christians. It is one of the four holy cities of the Talmud ; the others being Szaffad, Jerusalem, and Hebron. It is esteemed sacred ground, because Jacob is alleged to have resided here, and because it is situated on the Lake Genesareth, out of which, according to Rabbinical tradition, the Messiah is to rise.

Jews resort to this place from all quarters of the globe, in order to pass their days in praying for their own salvation and that of their brethren who are occupied in worldly pursuits. The sacred duties are rendered the more indispensable from a dogma of the Talmud, that the world will return to its primitive chaos if devotions are not offered up to the God of Israel at least twice a week in the four holy cities. This belief is of considerable pecuniary advantage to the supplicants, as the missionaries, whom they send abroad to Spain, Barbary, Egypt, Greece, Poland, Bohemia, &c. to collect alms, are in the habit of frightening the rich Jews into a liberal supply of money, by pleading the danger of the threatened dissolution of the universe, should they neglect to keep up these devotional services. If a pilgrim brings a little money with him, the cunning of the devout citizens soon deprives him of

it; for as he is generally impressed with extravagant ideas of the sanctity of the place, he is easily imposed upon before his enthusiasm begins to cool. To rent a house in which some learned Rabbi or saint died, to visit their tombs, to have the sacred books opened in his presence, or public prayers read for his salvation; all these inestimable advantages, besides various other minor religious tricks, quickly strip the stranger of his last farthing. He then becomes dependent upon the charity of his nation, upon foreign subsidies, or the fervour of some new comer, as inexperienced as himself.

The Jews here spend almost their whole time in the schools and synagogues. They possess some very beautiful copies of the books of Moses, written upon leather instead of parchment, and perhaps manufactured at Bagdad, where the best Hebrew scribes live. "They observe a singular custom in praying: while the Rabbi recites the Psalms of David, or the supplications extracted from them, the people frequently imitate by their voices or gestures the meaning of some remarkable passage; for example, when the Rabbi pronounces the words, 'Praise the Lord with the sound of the trumpet,' they imitate the instrument through their closed fists. When 'a horrible tempest' occurs, they puff and blow, to represent a storm; or should he mention 'the cries of the righteous in distress,' they all set up a loud screaming; and it often happens, that while some are still blowing the storm, others have already begun the cries of the righteous,—

thus forming a concert which it is difficult for any but a zealous Hebrew to hear with gravity."

Not far from the town there are hot-baths, much resorted to from all parts of Syria, being reckoned very efficacious for rheumatism and constitutional debility. The water of the lake rises, during the rainy season, three or four feet above its ordinary level; owing, perhaps, to the great number of winter torrents which empty themselves into it. It was around its borders, or upon its surface, that many miracles of the Messiah were wrought; the fishery, which afforded the means of livelihood to several of the Apostles, is now totally neglected, and can scarcely yield employment for a single boat.

A few hours' journey to the westward of the town is Mount Tor, or Tabor, the scene of the transfiguration; although the exact spot is disputed between the Greek and Latin Christians, who have each their own chapel, wherein the sacred event is commemorated. It is nearly insulated, of a conical shape, and overtops all the neighbouring summits. The top is flat and of considerable circuit, the sides, except towards the south, are covered with a forest of oak and wild pistachio trees. The view from the hill is exceedingly beautiful, and has been admired by all travellers. On one side the expanse of the Mediterranean is seen in the distance; nearer are Carmel, the mountains of Gilboa, and Nazareth, the hills of Samaria on the south; the sea of Tiberias on the east, the mount of Beatitude towards the north, and farther in the same direction, Mount

Hermon and the snowy peaks of the Anti-Libanus. Immediately around are the rich and spacious plains of Esdraelon and Galilee, the most fertile part of the Land of Canaan, the inheritance where the tribe of Issachar "rejoiced to pitch their tents."

In this region occurred some of the most memorable events of Scripture history. Here it was that Barak, descending with his ten thousand men from Tabor, discomfited Sisera with all his chariots. In the same neighbourhood, Josiah, king of Judah, fought in disguise against Necho, king of Egypt, and fell by the arrows of his antagonist. Vespasian reviewed his legions in the same great plain; and from the days of Nebuchadnezzar to the invasion of Napoleon, it has been a chosen place for encampments in every contest carried on in Palestine. When the French entered Syria in 1799, General Kleber was here attacked by an army of 25,000 Turks. Here, too, is to be fought the great battle of Armageddon, so well known to all interpreters of prophecy, which is expected to change the aspect of the Eastern world.

On leaving Tabaria, Burckhardt proceeded to Nazareth; visiting in his route several spots recorded in the New Testament, among others the village of Cana (Kefer Kenna), where the miracle at the marriage-feast was performed; and the Kerom Haltun, a small oblong hill, which the Christians call the mount of Beatitude, where Christ delivered his sermon, and where they allege the five thousand were fed. Naszera, or Nazareth, is one

of the principal towns of the Pashalik of Acre. As might be expected, it abounds with relics and legends connected with the parentage and infancy of the Messiah. Travellers are still shown the house and workshop of Joseph; the latter, which is near the convent, is now a small chapel, perfectly modern, and white-washed like a Turkish sepulchre;—the synagogue where Christ disputed with the doctors;—the precipice from which the monks aver he leapt down to escape the rage of his townsmen, who were offended at his applications of the sacred text;—the table, a long flat stone, on which it is affirmed he eat meat with his disciples, both before and after his resurrection, are among the venerable curiosities pointed out to the devout pilgrim.

But the principal of these ancient monuments is the convent of the Latin Friars, a very spacious and commodious building, within which is the church of the Annunciation, containing two tolerably good organs, and next to the Holy Sepulchre at Jerusalem, the finest church in Syria. Here is shown the spot where the angel stood when he announced the Messiah to the Virgin. Behind the altar is a subterraneous cavern, divided into small grottoes, where Mary is said to have lived; her kitchen, parlour, and bed-room are shown; besides several other pious wonders, of which the Syrian Christians have a copious stock, unfounded upon any authority of Scripture.

At the time of the French invasion, Nazareth

was occupied by six or eight hundred men. Bonaparte dined in the town, which was the most northern point of his expedition; he had come to the relief of Kleber, who had encountered 25,000 Turks in the plain of Esdraelon, and returned the same day to Acre.

As Burckhardt had resolved to visit Szalt, a strong castle in the mountains of Belka, which he had not been able to see during his late tour in the Haouran, it happened fortunately that two petty merchants from that place came to Nazareth when he was on the eve of his departure; he joined their little caravan; and after passing the ruins of Endor (where the witch's grotto is shown), Nablous, Beysan (Scythopolis), and Jabbok, the travellers descended into the Ghor, or valley of the Jordan, and arrived at Szalt, which is only a few hours' journey from Djibel Djelaoud, the Gilead of Scripture history.

The Szaltese are entirely independent of the Turkish government; a few of them are artisans, but the greater number pursue agriculture. In July and August they collect in the mountains the leaves of the sumach, which they dry and carry to the market at Jerusalem, for the use of the tanneries. The merchants also buy up ostrich feathers from the Bedouins, which they sell to great advantage at Damascus. Many hills and ruins in this district preserve the names of the Old Testament, and elucidate the topography of the provinces that fell to the lot of the tribes of Gad and Reuben.

From the town of Szalt, which stands on the declivity of the mountain, crowned by the castle, there is a fine view over the Ghor; Rieha, or Jericho, is visible at a great distance to the southward; and in the neighbouring valley of Mezer Osha, tradition points out the tomb of the Prophet Hosea, which is in the form of a coffin, thirty-six feet long, three broad, and three and a half in height. Both Turks and Christians are in the habit of offering prayers and sacrifices in honour of the saint. Visitors generally drop a few *paras*, which are collected by the guardian ostensibly for defraying the expense of illuminating the vaulted building which contains the tomb, and also serves as a mosque.

At the distance of about twenty miles to the eastward are the ruins of Ammon, situate in a valley on both sides of a rivulet that empties itself into the Zerka. The most remarkable of these is a large amphitheatre, which is much decayed, and much inferior to that of Djerash. Many edifices, such as churches, temples, columns, arched bridges, &c., still remain to attest the former splendour of Ammon; amongst which is the castle, whose walls of immense thickness consist of huge blocks of stones piled up without cement, denoting a very remote antiquity. Having with some difficulty procured a guide, Burckhardt continued his route, and in ten days and a half arrived at Kerek, passing in course of his journey various places mentioned in the Old Testament,—Heshbon, Baalmeon, Medala, Kirjathaim, Mount Nebo, the Plains of

Moab, Diban, Aroer, Rabbath Moab, and the deep beds of two torrents, El Nale and El Modjib, which he supposes to be the Nahaleel and Arnon.

Kerek, which lies a few miles eastward from the lower extremity of the Dead Sea, has long been, and still is, an important position. The town is built on the top of a precipice, surrounded on all sides by a deep and narrow valley, but commanded by the mountains beyond it. Originally it had only two entrances, one to the south, and the other to the north, which were merely long dark passages cut through the rock. It was anciently the principal city and fortress of the Nabathean Arabs; and during the first ages of their intercourse with the Greeks, it was known to the latter by the name of Petra, so often applied by them to barbarian hill-posts.

When the Macedonians became acquainted with this part of Syria by means of the expedition which Antigonus sent out against the Nabatheans under his son Demetrius, we are informed by Diodorus that the Arabs placed their old men, women, and children "upon a certain rock," steep, unfortified by walls, and admitting only of one access to the summit. From this description, and its vicinity to the Lake Asphaltites (the Dead Sea), we may presume that Kerek is the place here referred to by the Greek historian; and that when the increase of commerce required a situation better fitted for the growing population and wealth of the Nabatheans, the appellation of Petra was transferred to another



city, which became the capital of Northern Arabia, and the great *entrepot* of the trade from India, Persia, and Arabia, to Egypt and the Mediterranean. Kerek then became distinguished by its own name in the Greek form of Charax; it was afterwards strongly fortified, and in the time of the crusades was a stronghold of the Saracens. Its chief or sheikh is still a powerful personage, and a leading character in the affairs of the deserts of South Syria. His conduct to our traveller, as we shall soon find, was very unfriendly, although he had been particularly recommended to him by a grandee of Damascus.

The inhabitants of Kerek are esteemed excellent warriors; they are hospitable to strangers; and as butter is with them a principal article of domestic consumption, it is considered an unpardonable meanness to sell it, or exchange it for any necessary or convenience of life; so much so, that if a man is known to have transgressed in this respect, his daughters or sisters would remain unmarried, for no one would dare to connect himself with the family of a Baya el Samin, or butter-seller,—the most insulting epithet that can be applied to a Kerekein. This people intermarry with the Bedouins, but they do not treat their wives so affectionately as the Arabs. If one of them happen to fall sick, and her sickness is likely to prevent her for some time from taking care of the household affairs, the husband sends her back to her father's house with a message that "he must cure her," for, as he says, "I bought a healthy wife of you, and it

is not just that I should be at the expense or trouble of curing her." He never provides clothes or articles of dress for his spouse; she is in consequence obliged to apply to her own family, or to rob her husband of his wheat and barley, and sell it clandestinely in small quantities, otherwise she could not appear decently in public. The inhabitants hold commercial intercourse with Jerusalem, for which place a caravan departs every two months.

Burckhardt had not an opportunity of descending to the borders of the Dead Sea, but he took notes of the descriptions of it which were given him by the natives. The hills towards the south abound in rock-salt, which is washed off by the winter rains and carried down into the lake. The asphaltum, which the Arabs pretend oozes from the fissures in the eastern cliffs, is collected in large pieces on the rocks below, where the mass gradually increases and hardens until it is rent asunder by the heat of the sun with a loud explosion, and falling into the sea, it is carried by the waves in considerable quantities to the opposite shore. At the northern extremity of the lake, the stink-stone is found; its combustible properties are ascribed by the Arabs to the magic rod of Moses, whose tomb is not far from thence. The water of the Dead Sea is so strongly impregnated with salt, that the skin of the legs of those who wade across it soon afterwards peels entirely off.

After remaining nearly three weeks at Kerek, waiting the departure of the sheikh, Burckhardt set

out, accompanied by that chief, with an escort of about forty horsemen. The sheikh pretended he had business in the mountains of Djebal (the ancient Gebalene); but he soon proved a treacherous friend, and left our traveller to shift for himself, after plundering him of nearly all his money and property, although he had sworn by the most solemn oath of the Bedouins,—laying his hand upon the head of his little boy and the fore-feet of his mare,—that he would conduct him to a territory whence he might proceed with safety to Egypt. Having satisfied his own cupidity, he recommended his guest to the care of a Bedouin as avaricious as himself, who stript him of the remainder of his money, and then abandoned him to the chances of the desert. In this situation he encountered many difficulties, and was obliged to walk from one encampment to another, until he found a person who engaged to carry him to Cairo.

In company with his new guide, he continued his route along the eastern border of Wadi Ghoeyr, which divides the district of Gebalene from Djebal Shera, the Mount Seir of Scripture, in the territory of the Edomites. This chain of mountains is a continuation of the eastern Syrian range, which begins with the Anti-Libanus, joins Mount Hermon, forms the valley of the Ghoeyr, passes the border of the Dead Sea, and stretches to the Gulf of Akaba. The great valley of the Ghoeyr (or Jordan) may be said to extend from the source of that river to the Red Sea. It widens about Jericho,

where its enclosing hills are united to a range of mountains which open and include the Dead Sea. At the lower extremity of this lake they again approach, and leave between them a valley similar to the northern Ghoeyr in shape, but which the want of water makes a desert; whereas the Jordan and its numerous tributaries render the other a fertile plain. At a short distance south of the Dead Sea it is interrupted by rocky ground, when it takes the name of Arabah, which it retains until its termination near Akaba.

The existence of this lower valley, as Burckhardt remarks, appears to have been unknown to ancient as well as modern geographers, although it is a very remarkable feature in the topography of Syria and Arabia Petræa; and is still more interesting for its productions. Indigo is of common growth; so is the coloquintida, the szadder, a species of the cochineal-tree, the talh or acacia, which produces the gum-arabic, the tarfa or tamarisk, and the asheyir or silk-tree, which bears a fruit of reddish-yellow colour, containing a white substance resembling the finest silk, and used by the Arabs as matches for their firelocks. It is here also, as well as in the desert of Mount Sinai, that the manna is still found. It is called by the natives Assal Beyrouk, or the honey of Beyrouk. "It was described to me," says Burckhardt, "as a juice dropping from the leaves and twigs of a tree called Gharrah, of the size of an olive-tree, with leaves like those of the poplar, but somewhat broader. The honey collects

upon the leaves like dew, and is gathered from them, or from the ground under the tree, which is often found completely covered with it. According to some, its colour is brownish; others said it was of a grayish hue; it is very sweet when fresh, but turns sour after being kept for two days. The Arabs eat it like honey (or make cakes of it), with butter; they also put it into their gruel, and use it in rubbing their water-skins, in order to exclude the air."

The fields around Tafyle are frequented by immense numbers of crows; the eagle (Rakham) is very common in the mountains, as are also wild boars. Large herds of mountain goats are met with, which pasture in flocks of forty or fifty together, and are killed by the inhabitants for their flesh and their huge knotty horns, which they sell to the Hebron merchants, who carry them to Jerusalem, where they are worked into the handles of knives and daggers. They are the Steinbock or Bouquetin of the Swiss and Tyrol Alps; and when pursued, it is said they will throw themselves from a height of fifty feet or more upon their heads, without receiving any injury. About Kerek and Mount Seir, the bird Katta (or *Tetrao alkatta*), a species of partridge, is very abundant; they congregate in such large flocks, that the Arab boys often kill two or three of them at a time, merely by throwing a stick among them. "It is not improbable," says Burckhardt, "that this bird is the Seloua or quail of the children of Israel."

But the most interesting feature of Wadi Arabah is its association with the early history and commerce of the Israelites. That this valley gave its name to the whole peninsula of Arabia, there is little reason to doubt. As it belonged to the descendants of Ishmael from the earliest ages (Gen. xxv. 13), it is natural to suppose that these warlike tribes would give the name of their original dominions to the territories which they conquered, until it extended over the whole country, which they are recorded to have subdued as far as Mecca. Moses repeatedly calls the western wilderness Arabah, and describes it (Deut. i. 1, 2), with a minuteness not to be mistaken, as situated "over against the Red Sea, between Paran and Tophel, and by the way of Elath and Ezion-gaber." It was probably the Kadesh-barnea of the same historian, through which he retreated southwards when "Edom refused to give Israel a passage through his border," (Numb. xx. 21), so that they had no alternative left but to retrace their steps, following the direction of the valley as they "journeyed from Mount Hor (which rises abruptly from the valley, and where Aaron died), by the way of the Red Sea, to compass the land of Edom, through the way of the plain (in Hebrew, Arabah), from Elath, and from Ezion-gaber," until "they turned and passed through the wilderness of Moab, and arrived at the brook Zared," which flows close by Zoar and the lower end of the lake of Sodom. The preservation of so many Scripture names, together with the other

geographical facts derived from the journey of Burckhardt through these interesting regions, furnish a most satisfactory illustration of the Mosaic account of the Exodus.

At a later period, Arabah seems to have formed the "highway" of Jewish commerce. It is probable that the trade between Jerusalem and the Arabian Sea was carried on through this valley; the caravans, loaded at Ezion-gaber on the upper point of the Elanitic Gulf with the treasures of Ophir, the ivory and peacocks of India, might after a march of six or seven days deposit their cargoes in the warehouses of Solomon.

The prolongation of the Ghor and the Arabah, which completes a longitudinal separation of Syria for three hundred miles, is a very remarkable feature in the geography of the Holy Land; indicating that the Jordan once discharged itself into the Red Sea about Akaba, and confirming the truth of the great volcanic convulsion described in the 19th chapter of Genesis, which interrupted the course of the river by converting into a bituminous lake those fertile plains occupied by the cities of Adma, Elam, Sodom, and Gomorrah; and changing all the valley to the southward into a sandy desert. This valley, as Burckhardt remarks, deserves to be thoroughly known; its examination would lead to many interesting discoveries, and ought to be one of the most important objects of a Palestine traveller.

At this stage of his journey Burckhardt formed

the resolution to visit the remains of one of the most singular spots in these deserts, perhaps in the eastern world ; we mean the city of Petra, the ancient capital of Idumea, which he had the good fortune to discover after it had been for a long series of ages completely hidden from the knowledge of Europeans, and its very name almost effaced from the page of history. These ruins are situated in Wadi Mousa, a narrow valley at a short distance eastward from Arabah. He had heard the country people speak in terms of great admiration of these antiquities ; but from the ferocity of the Arabs, and the suspicion with which they view all strangers who can give no better reason than curiosity for coming among them, the attempt was attended with some danger. His guide also took the alarm, but his reluctance was overcome by working upon his superstitious feelings. " I pretended," says Burckhardt, " to have made a vow to slaughter a goat in honour of Haroun (Aaron), whose tomb (held in great veneration by the Arabs) I knew was situated at the extremity of the valley ; and by this stratagem I thought that I should have the means of seeing the valley in my way to the tomb. To this my guide had nothing to oppose ; the dread of drawing upon himself, by resistance, the wrath of Haroun, completely silenced him."

In a few hours they approached the place, through a wilderness so dreary and desolate, that we can scarcely imagine how it was ever adorned with walled cities, or inhabited by powerful and opulent

people. The entrance to this celebrated metropolis of the Stony Arabia (whence it derived the name of *Petræa*) is from the eastward, through a deep ravine, called *El Syk*; and it is not easy to conceive any thing more awfully sublime. The width in general is not more than sufficient for the passage of two horsemen abreast, and it forms the channel of the small stream that watered the city, whose course was protected by a covering of stone pavement, vestiges of which still remain. On either hand rises a wall of perpendicular rocks, varying from four hundred to seven hundred feet in height, which often overhang at the top to such a degree, that without their actually meeting, the sky is intercepted, scarcely leaving more light than in a cavern, for a hundred yards together.

The sides of this romantic chasm, from which several streamlets issue, are clothed with the tamarisk, the wild fig, the oleander, and the caper plant, which sometimes hang down from the cliffs in beautiful festoons, or grow about the path with a luxuriance that almost obstructs the passage. Near its entrance, a bold arch is thrown across it at a great height; but whether it be the fragment of an aqueduct, or part of a road formerly connecting the opposite cliffs, is not known.

For nearly two miles this natural defile winds its way, the sides continuing to increase in height as the path descends; and in different places grooves or artificial beds branch off from the rivulet, the use of which must have been to convey a supply of

water to the gardens and houses in the higher parts of the city. The solitude is disturbed by the incessant screaming of eagles, hawks, owls, and ravens, who have their habitation among the rocks above, and naturally take the alarm when their lonely abodes are invaded by strangers.

At every step the scenery discovers more and more remarkable features. About half-way through there is a single spot where the area of the ravine spreads a little, and sweeps into a kind of irregular circle. Here was the site of a very extraordinary work of art, to which the Arabs give the name of Kazr Faraoun, the castle or palace of Pharaoh, although it resembles more the sepulchre than the residence of a prince. The front of this curious mausoleum rises in several stories to the height of sixty or seventy feet, ornamented with columns, rich friezes, pediments, and large figures of horses and men. The interior consists of a large chamber, the walls and roof of which are quite smooth, and without any decoration. No part of this stupendous temple is built, the whole being hewn from the solid rock, which is sand-stone of a pale rose-colour; it looks as if newly from the chisel, without the tints or weather-stains of age; and its minutest embellishments, wherever the hand of man has not effaced them, are so perfect, that it may be doubted whether any work of the ancients, except perhaps on the banks of the Nile, has survived with so little injury from the lapse of time. There is scarcely a building in our own country, of forty

years' standing, so fresh and well preserved in its architecture as the *Kazr Faraoun*, which Burckhardt represents as one of the most elegant remains of antiquity he had found in Syria.

Towards the lower and wider extremity of this circuitous passage, its sides are sculptured and excavated in a most singular manner; and these monuments become more frequent, until at last it has the appearance of a continued street of tombs. The sombre perspective is here relieved by a stronger light, which gradually increases until the ruins of the city itself burst on the view of the astonished traveller in their full grandeur; shut in on every side by barren craggy precipices, from which numerous recesses and narrow valleys branch out in all directions, terminating in a sort of *cul de sac* without any outlet. Tombs present themselves on every hand, and are even intermixed with the public and domestic edifices; so that Petra has been truly denominated one vast necropolis. It contains above two hundred and fifty sepulchres, which are occasionally excavated in tiers, one above another; and in places where the side of the cliff is so perpendicular that it seems impossible to reach the uppermost, no access whatever being visible.

There are besides numerous mausoleums of colossal dimensions, and in a state of wonderful preservation. Among these are the *Kazr Benit Faraoun*, or palace of Pharaoh's daughter, and a theatre with complete rows of benches, capable of containing above three thousand spectators, all cut out of the

solid rock. The whole ground is strewn with heaps of hewn stones, foundations of buildings, fragments of pillars, and vestiges of paved streets,—the sad memorials of departed greatness. The steep sides of the rocky girdle that encloses the place is hollowed out into grottos, and dwellings of various dimensions, whose entrances are richly and often fantastically decorated with every order of architecture; showing how the pride and labour of art has vied with the rude sublimity of nature. The effect of the scene is heightened by the appearance of Mount Hor, towering above this city of sepulchres, and perforated almost to the top with caverns and excavations for the dead.

The vast extent of these stupendous ruins corroborates the accounts given, both by sacred and profane writers, of the kings of Petra, their courtly splendour, and their ancient power. Great must have been the opulence of a capital that could dedicate such monuments to the memory of its rulers. Their magnificence can only be explained by the immense trade of which it was the common centre, from the very dawn of civilisation; for although its ruins present a mixture of Greek and Roman architecture coeval with the Cæsars and Antonines, many of them are of a much remoter date; and there is indubitable evidence that Petra was a flourishing emporium seventeen hundred years before the Christian era. It was the point to which all the trade of Northern Arabia originally tended, and where the first merchants of the earth

stored the precious commodities of the East. It formed the grand *entrepot* between Palestine and Egypt, and there is little doubt that the company of Ishmaelites, with their camels bearing spicery, balm, and myrrh, to whom Joseph was sold by his brethern, were the regular caravan that visited its markets. The famous soothsayer Balaam was a native of this place, whose inhabitants, even at that age, were renowned for their learning, their oracular temple, and their skill in augury. It must have been the impregnable nature of the situation that rendered it so celebrated as a commercial depôt; for while it admitted of easy access to beasts of burden, it might defy the attacks of robbers or enemies, however formidable.

When the Romans conquered Syria, some of their ablest generals and emperors, amongst whom were Lucullus, Pompey, Severus, and Trajan, failed in their attempts to storm Petra. With the fall of that power in the East, and the new channels which were opened up for trade, the prosperity of this famous city declined, until its very position became unknown, and its name almost forgotten in Europe. Its once crowded marts ceased to be the store-house of nations, and until Burckhardt visited in 1812, the obscurity of a thousand years had covered its ruins. Since that time the travellers—Irby, Mangles, Bankes, Legh, &c.—have given more copious descriptions of these interesting relics; and within these few years, the most remarkable of them have been preserved in the drawings taken

on the spot by M.M. Laborde and Linant; some of which may be seen in the later editions of Keith's Evidence of Prophecy.

Singularly do these magnificent remains illustrate the words of the inspired volume, which foretold that wisdom and understanding should perish out of Mount Seir; that Edom should be a wilderness, its cities a perpetual waste, the abode of every unclean beast (Isaiah xxxiv. 5. 10. 17). Nowhere is there a more striking and visible demonstration of the truth of these divine predictions than among the fallen columns and deserted palaces of Petra, whose ruins can now be regarded only as the grave of Idumæa, in which its former wealth and splendour lie interred. The dwellers in the clefts of the rock are brought low; the princes of Edom are as nothing; its eighteen cities are swept away; and the territory of the descendants of Esau affords as miraculous a proof of the inspiration of Scripture history as the fate of the children of Israel.

When Burckhardt had taken as minute a survey of the ruins as time and circumstances would admit, he proceeded to the execution of his pretended vow, and for that purpose hired a guide, for a pair of old horse-shoes, to conduct him up Mount Hor to the tomb of Aaron; but as the sun had gone down, he was obliged to kill his goat at some distance, for the sacrifice answers equally well if performed within sight of the sacred spot. While he was slaying the animal, the pious guide commenced praying aloud: "O ~~Harmon~~ ^{Heaven}, look upon us! it is

for you we slaughter this victim. O Haroun, protect us and forgive us! O Haroun, be content with our good intentions, for it is but a lean goat! O Haroun, smooth our path, and praise be to the Lord of all creatures!" The force of the supplication for "smoothing the path" will be better seen when we explain that the whole of the surrounding wilderness, once described by an inspired penman as "the fatness of the earth," is now a desert of shifting sands, whose surface is covered with black flints and prickly shrubs; so that the Bedouins are obliged to carry in their girdles a pair of small pincers to extract the thorns from their feet.

It was the intention of the guide to conduct Burckhardt to Akaba, in the hope of meeting with some caravan for Egypt; but to this route he had strong objections; afraid that he might meet with danger or detention from the garrison of Ali Pasha, stationed there to watch the Wahabis, and who were extremely suspicious of all strangers. He therefore preferred to cross the desert direct for Suez, and had the good fortune to join a small company of Arabs who were carrying a few camels to the Cairo market. His destitute condition may be conceived from his own description:—"My clothes and linen were worn to rags; a dirty *kaffye* or yellow handkerchief covered my head; my leathern girdle and shoes had long been exchanged by way of presents, against similar articles of an inferior kind; so that those I now wore were of the very worst sort. The tube of my pipe was

reduced from two yards to a span; for I had been obliged to cut off from it as much as would make two pipes for my friends at Kerek; and the last article of my luggage—a pocket handkerchief—had fallen to the lot of the sheikh of Eldjy at Wadi Mousa.” Having nothing left to excite cupidity, he expected to be freed from all further demands; but in this he was mistaken; as some of the Arab ladies took a fancy to the few linen rags (torn from his shirt) that were bound round his ankles, which had been wounded by the stirrups: they begged so hard to have them for making a *borkoa* or face-veil, that he was compelled to yield to their importunities.

Their route lay across the desert of El Ty, to the northward of Mount Sinai, in which, according both to the Jewish and Mahommedan tradition, the children of Israel wandered for several years, and from which belief the desert takes its name. Burckhardt describes it as the most barren and horrid tract of country he had ever seen. Black flints cover the chalky or sandy ground, which in most places is without any vegetation. The *talh* and the tamarisk grow here and there, but the hungry camels are obliged in the evening to wander whole hours out of the road in order to find withered shrubs, on which they feed. During ten days they only met with four springs or wells, three of which were brackish or sulphureous. They passed a little to the northward of Suez, and arrived at Cairo (September 4) by the pilgrim road.

Burckhardt's first employment, on reaching Egypt, was to draw up a detailed account of his journey, which he soon afterwards transmitted to the Association. As he was now on the borders of the region which was the more immediate object of his researches, it was desirable that he should be prepared for setting out towards the countries of the Niger as early as an opportunity might occur. It happened, at the moment of his arrival, that a small caravan was on the point of returning from Cairo, by Timbuctoo, into some of the northern districts of the Great African Desert: and this was precisely the route in which it was intended he should commence his travels. But it was not thought advisable, until he had recovered from his fatigues and got his plans better arranged, to risk his own hopes and those of the Association upon such a precarious chance of success as this caravan would have afforded. Unless a prospect offered, in every respect favourable, it was not deemed prudent that he should enter upon his undertaking until a residence of several months in Egypt had made him familiar with a dialect and a system of manners and of policy differing considerably from those to which he had been accustomed in Syria. These were his own sentiments; and the committee in London entirely coincided in his views, that nothing was more to be avoided than the hazarding of his personal safety, together with the success of his mission, by the rash step of a hasty and ill-prepared departure.

The delay thus occasioned in his expedition to

Fezzan, was made profitable to African geography in another quarter. "I mean," says he, "to set out next month by land for Upper Egypt, as soon as the state of the Nile renders the journey practicable. I shall push on beyond the first cataract, and follow the course of the river, by the second and third cataracts, towards Dongola. That country, farther up than Derr, has never been visited by any travellers; yet I am informed by many of the natives that the borders of the river are full of ancient temples and other antiquities, resembling those of Luxor and the Isle of Philæ. The present tranquil state of Egypt renders such an undertaking of much less danger than it might have been during the whole of last century; for the Pasha is completely master of the country, and is in friendly intercourse with the princes of Nubia. This journey will, I hope, make me acquainted with the character of the Negro nations, and of those who traffic for slaves, and will thus facilitate my travels in the interior of the continent."

The expectations which he had thus formed were realized to the full. On the 11th of January, 1813, he left Cairo with a guide and letters of recommendation (from Ali Pasha among others) to all the governors of Upper Egypt. On the 22d of February he reached Assouan, the Aga of which procured him a guide up to Derr, the chief place in Nubia; and thence he proceeded to Mahass, on the northern frontier of Dongola. As he had followed the course of the Nile, he had an opportunity

of seeing the pyramids, temples, statues, and other antiquities with which the banks of that celebrated river abound; of many of them he took plans, copying inscriptions, and taking notes of the productions of the country and the habits of the people. On the 31st of March he returned to Assouan, and drew up a journal of his observations, which he transmitted to London. "It has been written," he adds, "in a miserable court-yard, on the side of my camel, under the influence of the hot Kamsin winds, which now raged in Upper Egypt."

His descriptions of the character and manners of the Nubians are curious and valuable; so also are his occasional remarks on the natural history of those countries. The hippopotamus, he says, is very common in the Nile, about Dongola; it is a dreadful plague, on account of its voracity, and the want of means in the natives to destroy it. The peasants eat the flesh, but sell the skin and teeth. Above Derr, the river has many windings; and this part of it is reputed a favourite haunt of the crocodile. Burckhardt saw half-a-dozen of them lying together on a sand-bank. The flesh of this animal is eaten by the Nubians whenever they can catch it; which, however, is but seldom. Gazelles of the common gray species are everywhere in great numbers; and hares are not uncommon.

The birds are a small species of partridge with red legs, wild geese of the largest kind, a few storks, the eagle, Rakham, crows in abundance, the Katta,

but in small flights, and clouds of sparrows, which are the terror of the Nubians, as they devour at least one-third of the harvest. A species of lap-wing is also extremely common; and a white water-bird of the size of a large goose, called Kork, which inhabits the sandy islands in flocks of several hundreds together. Burckhardt saw no bird of the shape of the Ibis; nor is that part of the country visited by the bird Zakzak, frequently seen in Upper Egypt, which is said to creep into the crocodile's mouth, and to feed upon the digested food which that animal throws up from its stomach.

When at Assouan, Burckhardt had projected a lateral excursion into the Nubian desert towards the Red Sea, and thence to cross into Arabia, before setting out on his western tour; but a delay of several months occurred, in consequence of the disturbed state of the country, which was much infested by robbers, and the scarcity of provisions along the Nile as far as Sennaar, occasioned by the locusts, who had entirely devoured the last winter crops. These causes continued to operate from May 1813 to August 1814, during which time Burckhardt was under the necessity of remaining at Esne, where he still kept his usual disguise of a poor Mohammedan trader, taking care to be as little known or noticed as possible.

At length (March 2) the caravan set out, crossing the Nubian desert in twenty-three days' slow travelling, nearly in the same route by which Bruce returned from Abyssinia, fifty years before. At

Berber they regained the Nile, along which they advanced to Shendey, one of the principal markets for the slave traders from Egypt, Darfour, Kordofan, and Sennaar. "It would have been easy for me," says Burckhardt, "to have proceeded to Sennaar, nine days distant from Shendey, and from thence into Abyssinia, following Bruce's track; but I wished to visit unknown districts, and I was convinced, from what I had already experienced, that a tour through those countries would be attended with expenses which I was little able to bear." As he travelled in the guise of a poor merchant, without a servant, and with only a single ass to carry his provisions and a few articles of traffic, he was occasionally exposed to some rude treatment on the part of his companions; but he enjoyed excellent health, his severest sufferings arising from want of water. In approaching the Nile, near Berber, they were quite sensible of it at two hours' distance, by the greater moisture in the air. "God be praised," exclaimed the Arabs, "we smell the Nile again!" The Nubian desert he represents as in general of a much less dreary appearance than the great Syrian desert, and still less so than those of Suez and Tyh. Ostriches were numerous in some of the plains; and very large lizards were observed, at least a foot in length from head to tail.

The dreaded Simoom, or poisonous wind, he thinks, has been much exaggerated by travellers, and alleges that the stories of whole caravans perishing

ing in those tornadoes, are tales invented by the Bedouins to frighten the townspeople. "In the Simoom at Esne," he remarks," the thermometer mounted to 121° in the shade; but the air seldom remains longer than a quarter of an hour in that state, or longer than the whirlwind passes. The most disagreeable effect on man is, that it stops perspiration, dries up the palate, and produces great restlessness."

He notices another phenomenon of the desert. which they encountered on the fourteenth day of their journey. "During the whole march we were surrounded on all sides by lakes of mirage (mist), called by the natives *soral*. Its colour was of the purest azure, and so clear, that the shadows of the mountains which bounded the horizon were reflected in it with the greatest precision, and the delusion of its being a sheet of water was thus rendered still more perfect. I had often seen the mirage in Syria and Egypt, but always found it of a whitish colour, rather resembling a moving mist, seldom lying steady on the plain, but in continual vibration; but here it was very different, and had the most perfect resemblance to water. The great dryness of the air and soil in this desert, may be the cause of the difference. The appearance of water approached also much nearer than in Syria and Egypt, being not more than two hundred paces from us; whereas I had never seen it before at a distance of less than half a mile. There were at

one time about a dozen of these false lakes round us, each separate from the other, and for the most part in the low grounds."

The people of Berber are a handsome race, having nothing of the Negro features about them; but their manners are extremely licentious. They all drink to excess of *bouza*, an intoxicating liquor, which they call *om bulbul*, or the mother of the nightingale, because it makes the drunkard sing. At these scenes of debauchery, quarrels frequently occur, and generally end in wounds or slaughter. "Nobody," says Burckhardt, "goes to a Bouza without taking his sword (or a knife) with him, and the girls are often the first sufferers in the fray." This description of character is applicable in every respect to the inhabitants of Shendey, who are equally dissipated. Their occupation is chiefly commerce; and they carry on a flourishing trade with Egypt, Sennaar, and Arabia; their principal commodities being spiceries, drugs, articles of hardware, and slaves.

Their cattle is of a fine breed, but they are much exposed to the ravages of wild animals. The tiger and the giraffe are often met with; the latter is hunted by the Arabs, and is chiefly prized for its skin, of which the strongest bucklers are made. There is a species of wild goat which are caught in nooses, in the same manner as they catch ostriches. The hippopotami occasionally make their appearance; they seldom rise above water in the day-time, but come on shore at night, destroying as much

by the treading of their enormous feet as by their voracity. The most esteemed whips, called *rorbadj*, are made of their skin, which are in general use in Egypt, the dread of every slave and peasant.

Crocodiles are very numerous; and at Sennaar their flesh is brought to the market and publicly sold. "I once," says Burckhardt, "tasted some of the meat at Esne; it is of a dirty white colour, not unlike young veal, with a slight fishy smell. It had been taken alive by some fishermen in a strong net, and was about twelve feet in length. The governor ordered it to be brought into his courtyard, where more than a hundred balls were fired against it without effect, till it was thrown upon its back and the contents of a small swivel discharged at its belly, the skin of which is softer." The rhinoceros inhabits the neighbourhood of Sennaar, but never visits the countries of the Nile to the north of that place. The natives call it *om kom*, or the mother of one horn; so that it is evidently from this animal that the imaginary unicorn has had its origin.

After remaining a month (April 17—May 17) at Shendey, where he disposed of his whole adventure of small wares and purchased a slave,—a boy of fourteen,—he set out with one of the Souakin caravans, in the direction of the Red Sea, passing the river Atbora (Astaboras) and the country of Toka, remarkable for its fertility; the whole soil, like that of Egypt, being periodically inundated by the torrents rushing down from the Abyssinian mountains.

It was his original intention to have proceeded down to Massuah, which harbour he would thus have reached by a northern road, different from that travelled by Bruce. But he found, notwithstanding the information received at Shendey, that there was no commercial intercourse between the two places. If he had travelled at all, it must have been in the character of a *dervish* or beggar; but the want of hospitality among the Arabs who inhabit those parts, rendered even that attempt impracticable. He was therefore obliged to abandon this project, and proceed to Souakin, higher up the coast, by one of the routes much frequented by the African pilgrim caravans on their way to Mecca. In thirteen days he arrived at that port (July 20), from which he crossed the Arabian Gulf to Jiddah.

At Souakin, he was suspected of being a spy or refugee of the Mamelouks, with whom Ali, Pasha of Egypt, was then at war; and this mistake had nearly involved him in some danger. The Turkish Emir, who governed in the Pasha's name, insisted upon taking his camel from him; and when he appealed for justice to the Aga, the latter threatened to imprison him and confiscate his whole baggage. Fortunately he had provided himself with two firmans, one from Ali himself, and another from his son Ibrahim; and on producing these, which he had hitherto concealed, the insolence and manners of the rapacious functionaries were suddenly changed into the most profound respect; and it appeared not a little suprising to the citizens to see a person

in the dress of a beggar, treated as if he had been superior to their own rulers.

Had circumstances permitted, Burckhardt intended to proceed, not to Jiddah, but to Mocha, and thence to Sanaa, the capital of Yemen, where he expected to join the pilgrim caravan from the south, in their annual route to Mecca. It had for some time been a favourite project of his to visit the interior of the Yemen mountains, where the origin of most of the Bedouin tribes in Arabia is to be found, and where their ancient manners are said to subsist in all their primitive simplicity. The performance of this journey would have been of considerable advantage to Arabian geography, and it might perhaps have led to interesting facts respecting Arabian history; but as the Wahabi war was then raging on the northern confines of that province, he was compelled to abandon the idea.

One of his chief motives for travelling in Arabia was, that he might visit the Hejaz or Holy Land of the Moslems, and perform the Mohammedan pilgrimage at Mecca; for it was his firm conviction, that the title of Hajji or pilgrim (held in great veneration by all the followers of the Prophet), which this ceremony would give him the right to assume, would prove of the greatest use to him in his travels in the interior of Africa, besides being of some advantage to the cause of science.

It was fortunate, so far as his personal safety and the facilities of travelling were concerned, that at the time of his arrival all the principal towns in the

Héjaz had been retaken from the Wahabis (who had conquered that province almost ten years before), and were then in possession of Ali Pasha. At the commencement of the war, the Pasha had sustained various repulses; but circumstances had turned out in his favour. Many of the Wahabi chiefs had been corrupted by the gold of Egypt; Ibn Saoud, the ablest and bravest of their leaders, had died of fever in April 1814; and his son Abdallah was much inferior, either as a statesman or a warrior, to his father. Having subdued the provinces on the Red Sea, Ali was at this time preparing an expedition under his younger son Toussoun Pasha, at Medina, for penetrating into the interior, and attacking the sectarian insurgents in their own capital of Deraiah.

So far, events tended to facilitate Burckhardt's Arabian tour. The only obstacle he had to encounter was some difficulty in obtaining a supply of money, the letter of credit which he had brought from Cairo to a person in Jiddah not having been honoured, under pretext that it was dated eighteen months back; but the true cause perhaps was the raggedness of his own appearance (his clothes by that time were worn to tatters), which might have rendered any stranger cautious in committing himself by advancing money on such suspicious correspondence. To increase his misfortunes, he was seized with fever, which kept him delirious for several days, and might have terminated fatally, but for the attentions of a Greek captain, who had been a

fellow-passenger with him from Souakin. His necessities even compelled him to part with his only slave, whom he had purchased at Shendey for sixteen dollars, and now sold for forty-eight.

In these circumstances, he had no resource but to apply to Ali Pasha, who was then at Tayf, a town eastward of Mecca, distant five days' journey. The Pasha knew him well in Egypt, and had always professed to be his friend. Meantime, however, his situation became known to Yahya Effendi, the physician of Toussoun Pasha at Jiddah, whom he had also met at Cairo, and with him he negotiated his bill to the amount of 3,000 piastres (about £100), which was sufficient for his wants until he received fresh supplies from Egypt. Nor was this the whole extent of his good luck, for the Pasha returned a favourable answer to his letter, and despatched a messenger with two dromedaries, with an order to furnish him a new suit of clothes, and a purse of 500 piastres as travelling-money; requesting, at the same time, that he would immediately accompany the messenger to Tayf. The invitation of a Turkish Pasha is equivalent to a command; and therefore he had no alternative but to comply, although it interfered with the more material objects of his journey.

The month which he spent at Jiddah enabled him to furnish a very minute description of the town and its inhabitants, who are almost exclusively foreigners. Their chief occupation is commerce, as this place is not only the port of Mecca, and conse-

quently much frequented by pilgrims, but also that of Egypt, India, and Arabia, through which all the exports from those countries pass that are destined for the Egyptian markets. They pursue no manufactures or trade but those of immediate necessity. By land they carry on no traffic except with Mecca and Medina. With the former city, the intercourse is kept up regularly by caravans which depart every evening after sunset. The loaded camels take two nights to perform the journey (about 55 miles); but the ass-caravans, lightly laden, by which letters are conveyed, go through in one night, and arrive at Mecca in the morning.

The visit to the Pasha, Burckhardt expected would have afforded him a good opportunity for seeing the Arabian capital, the Holy City of Islam, which none but a true Mussulman, since the days of Mohammed, had ever been permitted to enter; but the messenger had orders to take him by the upper route, which merely touches the suburbs, while the other, and more usual road, passes through the middle of the town. The surrounding country is covered with sand, and almost wholly destitute of vegetation; the hills, equally barren, rising on both sides, and resembling cocks of hay.

Near Tayf the country improves; and though the town itself is concealed with a sandy plain, there are many beautiful gardens at the foot of the neighbouring mountains, abounding in roses, and celebrated over all Arabia. The fruits, consisting of grapes, figs, quinces, pomegranates, &c., are deli-

cious. Here the natives have small pavilions, where they pass their festive hours ; and here the rich merchants of Mecca, with the Sheriff himself, often retire during the hot season.

When Burckhardt arrived (August 28th), he alighted at the house of Bosari, the Pasha's physician, with whom he had been well acquainted at Cairo. As it was then the fast of Ramadan, during which the Turkish grandees always sleep in the day-time, he could not be introduced to the Pasha till sunset. Ali received him very politely, inquired after his health, and if he brought any news of the Mamelouks from the Black countries, conversed with him on every subject but that which most interested him, viz. money.

On European politics he was particularly anxious to obtain information. He had just heard of the entrance of the Allies into Paris, and the departure of Bonaparte for Elba. "Bonaparte, he remarked, behaved like a coward ; he ought to have sought for death, rather than expose himself in a cage to the laughter of the universe." The name of Wellington was familiar to him. "He was a great general (he said), but he doubted whether, if his Grace had commanded such bad soldiers as the Turkish troops are, he would have been able to do with them as much as he (the Pasha) had done in conquering Egypt and the Hejaz." Of the English Parliament he had some notions ; but he entertained erroneous views as to the foreign policy of Great Britain ; as he supposed that after the downfall of

Bonaparte, the British army which had been employed in Spain and the south of France, would invade his dominions: "for (said he) the great fish swallow the small, and Egypt is necessary to England in supplying corn to Malta and Gibraltar." Had it not been for this persuasion, he would have been well pleased that the Czar should seize Turkey and drive the Sultan from the throne.

Whether Ali believed Burckhardt to be sincere in his profession of the Mahommedan faith, is doubtful. When he first heard of his purpose to visit the Holy Cities, he observed jocosely, "It is not the beard alone which proves a man to be a true Moslem;" and then turning to the Cadi of Mecca, who had been to Tayf for his health, and was sitting beside him, "but you are a better judge in such matters than I am!" Our traveller, however, had no objection that his qualifications should be put to the test; and accordingly, when the two most learned professors of the law, then in Arabia, were directed to examine him upon his knowledge of the Koran, and of the practical as well as doctrinal precepts of their creed, the result was a complete conviction in the minds of his hearers, as at his last two examinations, of his being not only a true but a very learned Mussulman. After one of these examinations, Burckhardt remarks with some naïvete, "I supped with the Cadi, and then performed the evening prayers in his company, when I took great care to chaunt as long a chapter of the Koran as my memory furnished at the moment."

He had several interviews with Ali, who supposed him to be a spy or a man of rank, and knew him to be an Englishman, although he had assumed the name of Sheikh Ibrahim. He offered no objections to his performing the pilgrimage; but declined giving him a firman authorising him to travel through the Hejaz, alleging that he did not wish to interfere personally with his affairs, and that his perfect knowledge of Arabic rendered a passport unnecessary.

From Tayf, Burckhardt returned to Mecca, 172 miles, where he passed the months of September, October, and November; during which he had ample opportunity to observe the appearance of that renowned city, its buildings, shops, trade, and manufactures; to study the manners, character, and customs of the inhabitants; their forms of government and worship, more especially the grand solemnity of the pilgrimage; having been the first Christian that ever ventured to mingle in the sacred ceremonies of the Kaaba. For the description of these particulars, the reader must consult the volume of travels on this subject, which was published in 1829, under the authority of the African Association. All that can with propriety be done here, is merely to give such an outline as will maintain a sufficient connexion and uniformity in the narrative.

Mecca, dignified by the Arabs with many high-sounding titles—the Mother of Towns—the Noble—the Region of the Faithful, &c.—lies in a narrow

winding valley, from 100 to 700 yards in breadth, the main direction of which is from north to south. The mountains enclosing this valley, and overhanging the town, are from 200 to 500 feet in height, rugged and completely barren. The houses are lofty and built of stone of a dark gray colour, with numerous windows facing the streets, which give them a lively and European aspect. The only public edifice worthy of notice is the great mosque or temple, which the Moslems call *Beitullah*, the House of God. It stands near the middle of the city, and is of a quadrilateral form, like what the Royal Exchange in London *was*; but said to be ten times larger. It is entered by nineteen gates, most of which have high pointed arches; those that front the great inner court are all crowned with small conical domes, plastered and whitened on the outside; beyond these is a second row of low spherical cupolas, amounting in all to 152; and above these rise seven minarets or steeples, from the summits of which a beautiful view is obtained of the busy crowds below.

Nearly in the middle of the court stands the Kaaba, the ark or tabernacle of the Mohammedans, the black stone in the corner of which is devoutly kissed by every pilgrim. The millions of salutes it has received from the lips of the Faithful have worn the surface round, and to a considerable depth. The Kaaba is an oblong massive building, the erection of which is ascribed by the Arabs to Abraham and Isaac; it is covered with a black silk stuff called

tob, or shirt, which is renewed every year at the time of the pilgrimage. Near it is the *Bir Zemzem*, or famous Zemzem well, said to be the same which the angel pointed out to Hagar and Ishmael in the wilderness, of which all the Mussulman hajjis drink copiously, in the belief that it purifies them of their sins. Linens dipped in this well they reckon to have a peculiar virtue, and such are constantly seen hanging to dry between the pillars of the temple. Many purchase their shrouds at Mecca, persuaded that if their corpse be buried in cloth wetted with the holy water, the peace of the soul after death will be more effectually secured.

The service of the temple employs a vast number of the inhabitants, including khatabs, imams, muftis, muezzins, ulemas, eunuchs, lamplighters, guides, turnkeys, scavengers, with a host of other menials, all of whom receive regular pay from the mosque, besides their share of presents made to it by the pilgrims. The Meccaweës are proud of being natives of the Holy City; in this respect they consider themselves under the special care of Providence, and favoured beyond all other nations. In former times the town is said to have contained more than 100,000 souls; Burckhardt reckoned them under 30,000, besides from 2000 to 4000 Abyssinians and black slaves. From the barrenness of the surrounding territory, it depends almost entirely on the lucrative traffic with the haj-caravans, the annual arrival of which converts its dusty streets into one of the largest and richest marts in the East.

The law of the Koran, it is well known, commands every Mussulman, who has the means, to perform a pilgrimage to Mecca, at least once in his life. The month set apart for this ceremony is called Dulhajja, which, as the Arabs use the lunar calculation, may happen at any period of the year, and gradually shifts its position through the whole circle of the seasons. In 1814, it happened in November. The crowds that assemble on that occasion from all parts of the Mohammedan world are immense; in former times they amounted to several hundred thousands; but owing to the interruptions of the Wahabis, they had considerably fallen off when Burckhardt travelled in Arabia. He reckoned them at more than 80,000, and the number of camels from 20,000 to 25,000. In general the regular caravans have fixed periods for their arrival. Those from Northern Syria bring the pilgrims of the West as far as Barbary and Morocco; from the South they come through Nubia and Abyssinia; the Indians take the route through Yemen or arrive by sea at Jiddah; the Persians assemble at Bagdad and traverse the desert of Nejed; the Turks, Tartars, and Syrians start from Damascus, journeying along the coast of the Red Sea. Most of these devotees are merchants, and bring with them, for traffic, the different wares and precious commodities of their respective countries.

The awful sanctity of Mecca requires that every traveller, whether on a religious visit or not, shall strip off his garments before approaching it in any

direction, within several miles, and assume the *Aram*, or pilgrim's cloak, which consists of two pieces of linen, woollen, or cotton cloth, one of which is wrapped round the loins, and the other thrown over the neck and shoulders, leaving the head and part of the right arm uncovered. On entering the city, the hajji has a variety of duties and rites to perform, such as visiting the mosque, saying a number of prayers, kissing the black stone, walking seven times round the Kaaba, drinking of Zemzem water, running between Safa and Meroua, shaving the head, chanting the *talbi* or pious ejaculations, &c.

When all these solemnities have been gone through, the pilgrims repair in a body to Mount Arafat, a granite rock about two hundred feet high, and six hours' walk eastward from the city. This is the grand day of the pilgrimage; and as the whole surrounding plain is covered with tents, bazaars, camels, splendid equipages, and busy multitudes of all descriptions, the sight from the hill is peculiarly inspiring. Here a sermon is preached, which must finish before sunset; and then the dense crowds hurry off, frequently pressing each other to death, in order to throw stones at the devil in Wadi Muna, in memorial of his having maliciously whispered into Ishmael's ear that he was to be slain. This narrow valley is three miles on their way back to Mecca, and abounds with sacred relics; for here tradition alleges Adam was buried, and here Abraham intended to sacrifice his son,—in

evidence of which a granite block is still shown, cleft in twain by the stroke of his knife.

After the "stoning," which is repeated three days, comes the grand sacrifice of animals, and in a quarter of an hour, thousands of sheep and goats are slaughtered; the law requiring that their throats be cut in the name of the most merciful God, with their faces towards the Kaaba. The number of these victims is sometimes very great. One of the caliphs is said to have offered 50,000 sheep, beside 40,000 camels and cows; and an old traveller (Barthema) speaks of 30,000 oxen being slain and their carcasses given to the poor, "who seemed more anxious to have their bellies filled than their sins remitted." On the completion of the sacrifice, the pilgrims throw off the *ihram*, and generally put on their best attire, to celebrate the *beiram*, or day of the feast.

The long valley of Mecca is then converted into a fair; sheds, booths, and tents being fitted up as shops for provisions and merchandise of all kinds. Men of every variety and colour, coming from the extremities of the earth, mingle here in the intercourse of business. The Moor and the Indian exchange commodities; the Syrian bargains for the shawls of Cashmere and the silks of Persia; the Anatolian gives his rich carpets for the red bonnets or woollen cloaks of Barbary and Morocco; the stranger from Borneo, or Timbuctoo, exhibits his wares to the natives of Georgia and Samarcand; the Turk finds a purchaser for his trinkets in the

half-naked Ethiopian or the negro of Guinea ; while the poor hajjis cry their small stock, which they carry on their heads, and dispose of for a few dollars to carry them home. The mixture of nations and tongues, of costumes and commodities, is more striking here than at Mecca. At night the valley blazes with illuminations, fireworks, discharges of artillery, and bonfires on the hills. The second day of the feast ends the pilgrimage to Arafat, when the devotees return to the city, testifying their delight by songs, loud talking, and laughter. A repetition of the same ceremonies already mentioned takes place ; and before bidding adieu to the capital of Islam, they must visit the holy places in the town and suburbs, among which are the birth-places of Mohammed and several of his kindred, the tomb of his favourite wife, the spots where his chief miracles were performed, and where he had some of his interviews with the angel Gabriel.

In all these religious exhibitions, Burckhardt was either an actor or an eye-witness. His knowledge of the Arabic language, and of Mohammedan manners, enabled him to personate the Mussulman with such success, that he mixed freely with the hajjis, and passed through the various ceremonies of the occasion without the smallest suspicion having arisen as to his real character. On the 18th of January, 1815, he set out with a small caravan of pilgrims who were going to visit the tomb of the Prophet at Medina, a journey of ten or eleven days (about 270 miles), mostly through sandy deserts, interspersed

with irregular ridges of mountains and cultivated valleys. His project was to remain about three weeks at that city, and then to return overland to Egypt, in the hope of being able to visit on his road some ruins, where he expected to find specimens of the most ancient Arabian monuments. In this, however, he was disappointed; for within a week after his arrival, he was attacked with a fever of the nature of a tertian ague, which kept him confined to his carpet until April. As the ceremonies required of the hajjis are here much easier and shorter than at Mecca, he had performed them immediately on reaching the place; it being the law here, as at Mecca, that all travellers and pilgrims must visit the mosque and the holy tomb of Mohammed before he undertakes the most trifling business.

Medina is a well built town, completely surrounded by a wall, and supposed to contain between 16,000 and 20,000 inhabitants. Its chief support is drawn from the temple, which resembles that at Mecca, and contains the ashes of the Prophet. This famous sepulchre is encircled with a high iron railing, arched overhead, and supported by columns. Near it are the tombs of the first two caliphs, Abu Beker and Omar, of Fatima, the daughter of Mohammed, and several other saints of the Arabian calendar. All of these of course are visited by the pilgrims, from each of whom certain gifts and fees are exacted. An additional sum is paid by those who enter within the railing of the

Prophet's tomb, as the Moslem divines affirm that a prayer said there is as efficacious as a thousand said in any other place, except Mecca.

From the state of weakness to which Burckhardt was reduced, he found himself obliged to give up all idea of travelling by land; and therefore, as soon as he could support the motion of a camel, he left Medina and proceeded to Yembo, on the coast of the Red Sea; where he arrived on the 27th of April. Here, as well as at Jiddah, the plague, an evil hitherto unknown in Arabia, had lately made its appearance; and its ravages soon became so great, that these towns were almost entirely deserted by their inhabitants. After a stay of two weeks, he embarked on board a *sambouk*, or large boat, and in twenty days landed at the promontory of Ras Mohammed, in the peninsula of Mount Sinai. From thence he reached Tor, where he had a severe relapse of fever, and where every thing was in a bustle of excitement, as the lady of Ali Pasha had arrived there from Yembo only a few days before. A fortnight's rest was necessary for him to recover strength sufficient to prosecute his journey; after which he continued his route by Suez, and reached Cairo on the 19th of June, having been absent nearly two years and a half.

During the subsequent nine months, his attention was principally devoted to the recruiting of his impaired constitution, and to the preparation of his Nubian and Arabian travels for the Association. In February, 1816, he transmitted to London the

journal of his tour from Upper Egypt and Jiddah ; and in October of the same year he sent the Committee a variety of papers, forming part of the information he had obtained during his journey through Arabia. They comprised, 1st, Some further fragments on the Bedouins, in continuation of the remarks he had made on former occasions ; 2d, A short history of the Wahabis, principally of Mohammed Ali's late campaign in the Hejaz ; 3d, A few notes to his former journals.

The pains he took to study the character and habits of the Bedouins, showed how deep an interest he felt in that singular people. " I believe (says he) that very little of their real state is known in Europe, either because travellers have not sufficiently distinguished them from Arabs in general, or because they have attempted to describe them without having had the advantage of seeing them at leisure in their own tents in the interior of the desert. Their nation is the original stock from which Syria, Egypt, and Barbary derive their present population ; and for this reason alone they deserve to be inquired into. But they acquire a still greater interest when we consider, that amidst the utter depravity of manners and morals, and the decline of laws and civil institutions throughout the Mahommedan world, the Bedouins are the only Eastern nation who have preserved their ancient customs, and who still continue to be what they were 1200 years ago, when their emigrating tribes conquered part of Asia, Africa, and Europe."

Early in 1817, he sent home the journals of his travels in the Hejaz, together with some notices on the interior of Africa, a translation from Macrizi's History of Egypt, containing some documents on the geography and inhabitants of Nubia and the Nile countries. In many of the regions which he visited, he had been anticipated by other travellers, with some of whom he formed a personal acquaintance. He found Salt and Belzoni labouring among the antiquities of Egypt; of the efforts of the latter in clearing away the rubbish from the pyramids, temples, sphinxes, obelisks, &c., he has given some interesting details in his letters to the Association. Dr. Seetzen, a German, had preceded him only a few years in his route through Syria, Arabia Petraea, Mount Sinai, and the Hejaz, to Mecca; but he was poisoned near Mocha, in September 1811, as has been already stated, and no part of his travels was ever published, except short fragments of his tour along the Jordan, by the Dead Sea, to Jerusalem.]

As Burckhardt's recovery was not so expeditious as his medical attendant had led him to expect, he determined to try the air of Alexandria, where he hoped the sea-breezes, and the society of Colonel Missett, would effectually re-establish his health. The change was of so much benefit (aided by the advice of Dr. Morgan, physician to Lady Hester Stanhope), that in a few weeks he was so far convalescent as to enable him to return to Cairo, with the view of making preparation for the exploration of Africa. Several months, however, elapsed, with

out bringing the Moggrebeyn or Western caravan, although the usual period of its yearly arrival had then passed by. This disappointment was not a little tantalizing; and as the capital of Egypt was then in a very disturbed state, owing to the attempts of the Pasha to drill his troops according to the European tactics; and was, moreover, assailed with another visitation of the plague, which had raged there for three successive years, Burckhardt considered it prudent to quit the infected banks of the Nile for a time, and seek for refuge among the Bedouins of Mount Sinai. This tour, besides avoiding the pestilence, he expected would give him an opportunity of pushing on as far as Akaba, and tracing the direction of the eastern branch of the Red Sea, which he believed had never been seen by European travellers.

On the 20th of April he left Cairo, in company with some Bedouins, who were returning to their mountains with corn which they had purchased in Egypt. In crossing the desert to Suez (between seventy and eighty miles), they found the road in many places covered with flints, petrosilex, pebbles, petrified wood, and large trunks of trees half-buried in the sand. From these appearances, Burckhardt conjectured, that before Pharaoh Necho dug the canal between the Nile and the Red Sea, the communication between Arsinoe, or Clysma (near Suez), and Memphis, may have been carried on this way; and that stations may have been established on the spots covered with these petrifications.

Suez is an unhealthy town, surrounded by barren wastes ; the air is bad, occasioned by the saline nature of the earth, and the extensive low grounds on the north and north-east sides, which are filled with stagnant water by the tides. It carries on a small trade with Egypt and Arabia, and might rise to some importance, were it to become an entrepot in the regular steam communication between Great Britain and India.

From this town, Burckhardt continued his route along the inner coast of the Gulf, in the same direction which the Israelites travelled after their miraculous passage through the Red Sea. Several places are identified with the events recorded in the Exodus. The Ayoun Mousa, or wells of Moses, still afford a copious supply of sweet water to the Arabs. A little farther on is the well of Howara, the Marah of Scripture, whose bitter waters were sweetened by Moses, and which the Israelites reached at the end of three days' march in the desert. The neighbouring valley of Wadi Gharendel, which contains date-trees, tamarisks, acacias of different species, and the thorny shrub, called Gharkad, was probably *Elim* with its " twelve springs and seventy palm-trees." The Hamman Faraoun, or baths of Pharaoh, record the fate of that adventurous monarch ; and the superstitious Arabs call the Gulf the Bahr el Kolzoum, or Sea of Destruction, in whose roaring waters they still pretend to hear the cries and wailings of the drowned Egyptians. The exact spot where this event happened, as well as the precise time of march

and different encampments of the chosen race, have become too obscure, through time and change, to be traced with accuracy. That it must have been in the neighbourhood of Suez is obvious, as the breadth of the Gulf lower down is too great (ten or twelve leagues) to have been traversed by the Hebrew fugitives in a single night, with so many encumbrances as they carried with them.

This is the opinion of Burckhardt, and of numerous other oriental travellers. Referring to the distance, and comparing natural facts with the statements of the Bible, he comes to the following conclusion:—"In moving with a whole nation, the march (about forty miles) may well be supposed to have occupied three days; and the bitter well at Marah corresponds exactly with that of Howara. This is the usual route to Mount Sinai, and was probably therefore that which the Israelites took on their escape from Egypt; provided it be admitted that they crossed the Red Sea near Suez, as Niebuhr (the Danish traveller) with good reason conjectures. There is no other road of three days' march on the way from Suez towards Sinai; nor is there any other well absolutely bitter, on the whole of this coast, as far as Ras Mohammed. The complaints of the bitterness of the water by the children of Israel, who had been accustomed to the sweet water of the Nile, are such as may be daily heard from the Egyptian servants and peasants who travel in Arabia."

With respect to the means employed by Moses

to sweeten the waters, Burckhardt frequently inquired among the Bedouins whether they possessed any means of effecting such a change, by throwing wood into it, or by any other process; but he could never learn that such an art was known. He suggests, however, that the effect might have been produced by the rod being of the Gharkad, which grows in this neighbourhood, in the same manner as is done by the juice of pomegranate grains. This supposition is not inconsistent with the miracle as related by Moses (Exod. xv. 25), "and the Lord showed him a tree, which when he had cast into the waters, the waters were made sweet." The Gharkad berry is juicy and refreshing, resembling a ripe gooseberry in taste; and when the crop is abundant, the Arabs make them into a conserve.

On the 1st of May they approached the central elevation of Mount Sinai, which had been visible for several days. This group forms an irregular circle of thirty or forty miles in diameter; and it is difficult to imagine a scene more wild and desolate. "Abrupt cliffs of granite (says Burckhardt), from six to eight hundred feet in height, whose surface is blackened by the sun, surround the avenues leading to the elevated platform to which the name of Sinai is specifically applied. These cliffs enclose the holy mountain on three sides, leaving the eastward only more open to the view. The narrow defile, by which the ascent is gained, is bounded on either hand with perpendicular rocks, and strewn with sand and pebbles, brought down by the tor-

rents which rush from the upper region in the winter-time. The sacred mountain consists of two elevations, called by the Arabs Gebel Mousa and Gebel Katerin (the Mounts of Moses and St. Catherine), which have generally been identified with Sinai and Horeb. Both terminate in a sharp peak, the planes of which do not exceed fifty or sixty paces in circumference. The latter is the higher of the two, and its summit commands a very extensive prospect of the adjacent country.

The whole of the surrounding wilderness is a collection of naked rocks and craggy precipices, interspersed with valleys and ravines, often destitute of verdure, yet occasionally adorned with trees and gardens fragrant with the richest perfumes.* On either hand may be seen the two arms of the Red Sea, a part of Egypt, and northward to within a few days' journey of Jerusalem. There is some doubt as to whether the Mount of Moses or of St. Catherine is the identical Sinai; and this confusion has arisen from the indiscriminate application of the names to both. Other two lofty mountains, more to the westward, called Serbal and Shomar, have also been considered as having rival pretensions to the distinction of having witnessed the promulgation of the decalogue; but these claims

* Burckhardt says, speaking of the gardens in some of these ravines, "The verdure was so brilliant, and the blossoms of the orange-trees diffused so fine a perfume, that I was transported in imagination from the barren cliffs of the wilderness to the luxurious groves of Antioch."

do not seem to be well founded ; and after all the theories and conjectures of travellers on the subject, the probabilities are stronger in favour of Gebel Katerin and Gebel Mousa than of any other.

Some sceptics have objected, that if this were really the mountain where Moses received the Tables of the Law, it would be found to exhibit traces of the awful phenomena which attended the manifestation of the Divine presence, in the visible symbols of fire and earthquake and volcanic eruption. Burckhardt, however, could not detect the slightest vestige of these supernatural appearances ; though there are islands in the Red Sea, and places on the coast of the Gulf of Akaba, which retain marks of volcanic action. But objections such as these are entitled to little weight ; for we do not read of any actual discharge from the mountain. It is described, indeed, as having “ quaked greatly,” and “ burned with fire,” and emitted smoke like a furnace ; but these appearances were not the effect of any natural convulsion ; they were rather the sublime accompaniments which the Deity chose to make the evidence and the harbingers of his presence,—the cloudy pavilion within which he received the leader and lawgiver of his chosen people.

The inhabitants pretend to identify with these mountains and deserts many of the scenes and events related in Scripture history. The convent which bears the name of its vice-patroness, St. Catherine, stands in a narrow valley at the foot of the mount, and is alleged to have been built by the

Empress Helena, mother of Constantine the Great, on the spot where the Lord appeared to Moses in the burning bush. It is still occupied by a few monks, most of whom are natives of the Greek islands. On the highest pinnacle of Gebel Mousa are the remains of a church, under the pavement of which the Arabs believe that the original tables of the ten commandments are buried; and they have made excavations on every side, in the hope of discovering them. Here also is the Convent of St. Elias, erected on the spot where Elijah was fed by the ravens. At no great distance, a block of granite is shown (apparently detached from Mount Sinai) as being the Rock of Meribah, out of which water issued when struck by the rod of Moses. The head of the golden calf (now changed into stone), which the Israelites worshipped; the place where the brazen serpent was elevated; the burial-place of Moses and Aaron; the pulpit and petrified pot or kettle of Moses; and a rock resembling a chair, on which he sat and beheld the fight between Joshua and the Amalekites; are among the sacred spots pointed out to the credulity of travellers and pilgrims.

It is obvious that little dependence can be placed on local tradition. Burckhardt expresses his disappointment at being able to trace so very few of the ancient Hebrew names of the Old Testament in the modern geography of the peninsula. With the exception of Sinai and a few others, the appellations are all of Arabic derivation; and the

incongruous union of Moses and St. Catherine is a proof how little reliance is to be placed upon them.

After visiting the sacred mountains, with their different objects of curiosity and veneration, Burckhardt had intended to proceed to Akaba; but in this he was disappointed, as the Pasha of Egypt had refused to grant him a firman, alleging, as on a former occasion, that he was sufficiently well acquainted with the language and manners of the Arabs to require any other recommendation. The danger of proceeding without this passport obliged him to retrace his steps, after he had penetrated to Sherm on the inner coast of the Gulf, nearly as far down as Ras Mohammed. From this point he travelled along the shore until within a short distance of its northern extremity, which he learned had only a single termination, instead of being forked, or divided into two branches as is usually laid down in our maps.

This excursion was not without other advantages to geography and natural science. It was near Sherm that he met, for the first and only time in the peninsula, with volcanic rocks. Serpents, too, he was told, are very common in these parts, and traces of them were seen crossing each other in various directions. The fishermen are so afraid of them, that they extinguish their fires before going to sleep, because the light is known to attract them. The Israelites passed near Akaba, when they journeyed from Mount Hor, by way of the Red Sea, to

compass the land of Edom,* where the prevalence of these reptiles at the present day is a remarkable illustration of the fact mentioned by Moses (Numbers xxi. 4, 6), that "the Lord sent fiery serpents among the people."† Scorpions, too, are numerous; and another venomous reptile, like a huge spider, to which the Bedouins give the name of Abou Hanakein, or the two-mouthed. Burckhardt describes it as about four inches and a half in length, with five long legs on both sides, covered like the body with setæ of a light yellow colour. The head is long and pointed, with large black eyes; the mouth is armed with two pair of fangs, one above the other, recurved, and extremely sharp. It is said to be attracted by fire; and the bite, if not always mortal, produces swelling, vomiting, and the most excruciating pains.

On the same coast, and in the lower valleys, a kind of large lizard is found, called Dhob, which has a scaly skin of a yellow colour, of which the natives make tobacco-pouches. The largest are about eighteen inches in length; they live in holes in the sand, and run fast, but are easily caught by dogs. Hares, gazelles, wolves, and leopards are found, but

* The steep side of the western mountain, from the plain of Akaba, corresponds very accurately with the "ascent of Akrabim," mentioned in Numbers xxxiv. 4.

† The translation of *fiery* or *flying* serpents is somewhat inaccurate. The meaning of the Hebrew is, "serpents whose bite causes death by inflammation." Burckhardt observes, that the Arabic version of the Pentateuch is more correct than ours, by rendering it "serpents of burning bites."

not very common. The Arabs spoke of a voracious animal called Slyb, supposed by them to be a breed between the leopard and the wolf; and of another beast of prey, called Wober, said to be of the size of a large dog, with a pointed head like a hog, and inhabiting only the most retired parts of the peninsula. The wild goats are abundant, and require as much enterprise and patience in the hunter to catch them as the chamois of the Alps.

In some of the valleys, fennel grows three or four feet high; the Bedouins eat the stalks raw, and pretend that it cools the blood. The tamarisk, or tarfa, is met with; and though it is a common tree in the East, in Nubia, and in every part of Arabia, Burckhardt remarks that he never heard of its producing manna, except in Mount Sinai. The Bedouins still call it *mann*, and gather it in the month of June. It is collected before sunrise, when it is coagulated; but it dissolves as soon as the sun shines upon it. When they have cleaned away the leaves and dirt that adhere to it, they boil it, and strain it through a coarse cloth; after which it is put into leathern skins, and preserved for use during the year. The apple, pear, and apricot trees grow only in the elevated regions of the Upper Sinai; while the valleys produce cucumbers, gourds, melons, onions, tobacco, hemp for smoking, &c.

Among other antiquities in the peninsula, of which Burckhardt gives some account, are the numerous inscriptions with which the rocks in several places are almost entirely covered. The most cele-

brated of these is the *Gebel Mokkateb*, or written mountains, not far from Sinai, which were discovered about the beginning of the last century, and excited a considerable sensation in Europe. Expectations were entertained that these unknown inscriptions might furnish some testimony concerning the passage of the Israelites through the desert, or their residence in that country. But on a nearer inspection, these sanguine hopes vanished; the carvings, with which the whole sandstone cliffs are thickly covered, to the height of twelve or fifteen feet, and several miles in length, were found to contain little else than the names of travellers and pilgrims, with rude figures of goats and camels, ill-engraved in Greek, Jewish, and Arabic characters.

Burckhardt is of this opinion, although he is not certain that the uncouth drawings of the animals may not have been the work of the Israelites. "It appears (says he) that each pilgrim, in passing, wrote his name; and the inscribed rocks are constantly found, on the sides of the different great roads leading from Suez to Gebel Sinai, usually near the resting-places, which were chosen where some impending cliff afforded shelter from the sun, and where the same convenience still induces travellers to halt. In the lower part of the mountain, the inscriptions are cut in sandstone; in the higher, upon granite. The characters have no depth; but upon granite, even this would be a labour exceeding the strength and leisure of ordinary pilgrims.

The want of water precludes the idea of an army having passed that way, the soldiers of which might have wished to perpetuate their names. Perhaps some of the drawings of animals, particularly those of camels and mountain-goats (*beden*), may have been done by the Israelite shepherds. I saw similar drawings, without inscriptions, upon rocks not far from Akaba. Upon the whole, these inscriptions appear to me to have a strong resemblance to some I have seen in Nubia, written in the ancient Egyptian current character; some letters, at least, appear to be common to both. My opinion is, that they were the work of Egyptian Christians, or perhaps Jews, during the first centuries of our era." Besides those of Wadi Mekkateb, he met with innumerable and well-written inscriptions on the declivity and on the summit of Mount Serbal, which he supposes to have been in former times the principal place of devotion and pilgrimage, as artificial steps lead to the top, which terminates in a platform of about 130 feet in circumference.

The excursion to Mount Sinai was the last journey which Burckhardt accomplished. From the time of his return to Cairo, in June 1816, till his death, in October 1817, he continued to reside in the Egyptian capital, occupied in preparing various papers for the Association; and in other employments connected with Arabic literature and his travelling pursuits. In May 1817 he sent to London the journal of his last tour, apologising for the bulk to which it had extended by the importance of the

region which it described, and the greater facilities for writing which he enjoyed. "This small country (says he), so important to the history of mankind, has never before been described in detail. The commentary on the route of the Israelites, which I have annexed to it, I submit with much diffidence to the perusal of the Committee, as I cannot but feel apprehensive, that what strikes me to be correct, may not appear equally so to persons who have not visited the desert, and have not travelled with the Bedouins. Should my opinions meet with approbation, I shall be particularly gratified in having been able to elucidate some obscure points of early history, and to vindicate the authenticity of the sacred historian of the Beni Israel, who will never be thoroughly understood, as long as we are not minutely informed of every thing relative to the Arabian Bedouins, and the country in which they move and pasture."

With regard to his opportunities for writing, his explanation of that circumstance illustrates the general mode in which he usually took notes during all his travels. Even when accompanying numerous caravans, he had never permitted any of his companions to see him write, knowing that if their suspicions were once raised, it would render them less open in their communications with him. The only instances in which he had departed from this rule was in Syria and Egypt, and in his first visit to Nubia. From the Arabs he was particularly careful to conceal his pursuits, as they uniformly

believe every stranger who uses writing implements to be a necromancer, who will steal their hidden treasures or inflict evils on their country.

Such being the case, Burckhardt had to resort to many little ingenious stratagems, not to lose entirely the advantage of taking his memoranda on the spot. He had accustomed himself to write when mounted on his camel, and proceeding at an easy walk. Throwing the wide Arab mantle over his head, as if to protect himself from the sun, as the Bedouins do, he could take notes under it unobserved, even though another person rode close by him. His journal books being only about four inches long and three broad, were easily carried in his waistcoat pocket; and when taken out, could be concealed in the palm of the hand. Sometimes he dismounted and walked a little in front, or turned aside, and feigned to couch down in the Arab fashion, hidden under his cloak; again, at halting-places, he would stretch himself on the ground as if to sleep, throwing his mantle over him; and by these artifices he succeeded in keeping pretty full accounts of what he saw or heard, without exciting observation or suspicion.

Only once, near Sinai, he was discovered by his guide. Having had no opportunity of taking notes for two days, he turned aside for a short time; but remained so long, that Ayd's curiosity was roused, and approaching on tiptoe, he came close behind him without being perceived, and suddenly lifting up the cloak, he detected his friend

with a book in his hand. "What is this?" he exclaimed; "What are you doing?" "You write down our country," he continued, in a passionate tone, "our mountains, our pasturing places, and the rain which falls from heaven; other people have done this before you, but I, at least, will never become instrumental to the ruin of my country." Burckhardt assured him that he had no bad intentions towards the Bedouins, for whom he entertained the greatest esteem; and then appealing to his superstitious credulity, he informed him that he was only using secret charms for the preservation of their lives; "For (said he), had I not occasionally written down some prayers ever since we left Toba (where they were in danger of being attacked), we should most certainly have been killed; and it is very wrong in you to accuse me of that which, if I had omitted, would have cost us our lives." At this reply Ayd was startled, and seemed nearly satisfied. "Perhaps you say the truth (he observed), but we all know that some years since, several men, God knows who they were (alluding to Seetzen and M. Agnotti), came to this country, visited the mountains, wrote down every thing,—stones, plants, animals, even serpents and spiders; and since then, little rain has fallen, and the game has greatly decreased." These opinions prevail, not only in the peninsula of Sinai, but among the Bedouins of Nubia. They believe that a sorcerer, by writing down certain charms, can stop the rains, and transfer them to his own country; and even conjure out

gold from the ruins of temples, by secretly marking the stones under which it is hid.

The letters which Burckhardt wrote to London, during his stay in Cairo, contain many valuable observations on the events which occurred about that time in Egypt and Arabia; such as the prosecution and termination of the Wahabi war by the destruction of Deraiah, their capital; the government and manners of the Egyptians; the researches of Belzoni, Bankes, and Salt among the ruins on the Nile; the geography and statistics of the surrounding regions; and, generally, upon those topics which were his principal objects of inquiry, as agent of the African Association. One cause of regret only existed, his detention in Egypt by the non-arrival of the Fezzan caravan, which he ascribed to the increased demand for black slaves on the coast of Barbary, to replace the white slaves so gloriously delivered by the English fleet and the reduction of Algiers.

In the pilgrimage to Mecca of the year 1817, among the hajjis that visited the temple from every part of the Mohammedan world, was a party of Moggrebeyns, or Western Africans, who were expected to return home, as usual, by way of Cairo and Fezzan. It was believed the caravan would take its departure from Egypt in the month of December; and as Burckhardt had now transmitted the last of his journals to England, it was with the utmost satisfaction that he contemplated the prospect, which at length so opportunely offered, of

putting the great purpose of his mission into execution. Feeling strongly armed in his long previous course of study and experience, he entertained hopes, not more sanguine than reasonable, of being able to penetrate in safety from Fezzan to the countries of the Niger; and of at last receiving the reward of his perseverance in the acquirement, for the public, of some authentic information upon the unknown regions of Africa.

But Providence had otherwise ordained. On the 4th of October, he found the symptoms of dysentery, which had for several days incommoded him, so much increased, that he applied for relief to Dr. Richardson, an English physician, who fortunately happened at that time to be at Cairo, traveling in the company of Lord Belmore. The disease, however, in spite of all the remedies administered, continued its progress from bad to worse with fatal obstinacy, and without any favourable remission.

On the morning of the 15th he proposed, and obtained the consent of his physician, that Mr. Henry Salt, then his Majesty's Consul-General in Egypt, should be sent for. "I went over immediately (says Mr. Salt, in a letter to the Secretary of the Association), and cannot describe how shocked I was to see the change that had taken place in so short a time. On the Tuesday before, he had been walking in my garden with every appearance of health, and conversing with his usual liveliness and vigour. Now, he could scarcely articulate his words, often made use of one for another, was of a

ghastly hue, and had all the appearance of approaching death. Yet he perfectly retained his senses, and was surprisingly firm and collected. He desired that I would take pen and paper and write down what he should dictate."

After instructing Mr. Salt to draw the money (£250) due to him by the Association, and to dispose of it partly to defray some necessary expenses, and partly in small gratuities to his servants, he proceeded, "Send one thousand piastres to the poor at Zurich. Let my whole library, with the exception of my European books, go to the University of Cambridge, to the care of Dr. Clarke the librarian, comprising also the MSS. in the hands of Sir Joseph Banks. My European books (they were only eight in number) I leave to you (Mr. Salt); of my papers make such a selection as you think fit, and send them to Mr. Hamilton (the Secretary) for the African Association. There is nothing on Africa: I was for starting in two months' time with the caravan returning from Mecca, and going to Fezzan; thence to Timbuctoo; but it is otherwise disposed. For my affairs in Europe, Mr. Rapp has my will.* Give my love to my friends (enumerating several

* This refers to a will made previous to his departure from England, according to which, in case he had advanced into the interior of Africa, and was not heard of by the 1st of January, 1820, he was to be considered as dead. By this will, he appointed his mother residuary legatee for all sums that might accrue to him from his engagements with the African Association.

persons with whom he was living in terms of intimacy at Cairo); write to Mr. Barker;”—he then paused and seemed troubled, and at length with great exertion said, “Let Mr. Hamilton acquaint my mother with my death, and say that my last thoughts have been with her. (This subject he had evidently kept back, as not trusting himself with the mention of it till the last.) The Turks (he added) will take my body. I know it; perhaps you had better let them.”—“When I tell you (continues Mr. Salt) that he lived only six hours after this conversation, you will easily conceive what an effort it must have been. The expression of his countenance, when he noticed his intended journey, was an evident struggle between disappointed hopes and manly resignation. Less of the weakness of human nature was perhaps never exhibited upon a death-bed. Dr. Richardson and Osman (an Englishman whom he had persuaded the Pasha to release from slavery), who has for some time lived with him, were both present at this conversation. He ended by expressing a wish that I should retire, and shook my hand at parting, as taking a final leave. So, unhappily, it proved; he died at a quarter before twelve the same night, without a groan. The funeral, as he desired, was Mohammedan, conducted with all proper regard to the respectable rank which he had held in the eyes of the natives.”

His dying requests were faithfully executed. His Arabic manuscripts (the choicest collection in Eu-

rope), were despatched to Cambridge by the first safe opportunity. This present was intended as a mark of his gratitude for the literary benefits and the kind attention which he had received there when preparing himself for his travels. A remembrance of favours was indeed one of the prominent traits of his noble mind. His liberality and high principle of honour, his detestation of injustice and fraud, his disinterestedness and keen sense of gratitude, were no less remarkable than his warmth of heart and active benevolence, which he often exercised towards persons in distress, to the great prejudice of his limited means.

Of this disregard of pecuniary matters, a single example will be sufficient. His father having bequeathed at his death about £10,000, to be divided into five equal parts, one to his widow, and one to each of his children, Lewis immediately gave up his portion to increase that of his mother. "If I perish (said he) in my present undertaking, the money will be where it ought to be; if I return to England, my employers will undoubtedly find me some means of subsistence." The strong feeling of affection which he cherished towards his relations, and the enthusiasm with which he devoted his life to the advancement of geographical discovery, were strikingly manifested on his death-bed, when he could not mention without hesitation his mother's name, and the failure of the great object of his mission.

As a traveller, he possessed no common talents

and acquirements. To fortitude and ardour of mind, he joined a temper and prudence well calculated to ensure his triumph over every difficulty. Though the exploration of Africa has been reserved for other adventurers; and though the great geographical problem of that continent has been solved since his death, his memory will receive its due reward of fame; for it cannot be doubted that he will be held in honourable remembrance so long as any credit is given to those who have fallen in the cause of science. The journeys he made, and the oral information he obtained relative to the regions southward and westward of Egypt, were valuable at the time, though now superseded by later and more extended observations. With respect to Arabia, his description of that country, of the manners and customs of the people, of the horse, the camel, and various other productions, is the most accurate and complete that has ever been received in Europe. The discoveries he made in Syria and the ancient Idumæa, have thrown a valuable light on the early history and wanderings of the Israelites, as well as greatly improved our knowledge of sacred geography, by ascertaining many of the Hebrew sites in the once populous but now deserted region formerly known by the names of Edom, Moab, Ammon, and the country of the Amorites.

After his death, his journals were published by the Association, though not exactly in their chronological order. In 1819, appeared his *Travels in Nubia*; in 1822, his *Tours in Syria, the Holy*

Land, and the Peninsula of Mount Sinai; in 1828, his Travels in Arabia; and in 1831, his Notes on the Bedouins, including materials for a History of the Wahabis, giving an account of the origin and religious tenets of that sect, and the expedition of Ali Pasha which ended in their suppression. The three first of these publications were in quarto, and the last in two volumes octavo.

INTRODUCTION

TO THE

FISHES OF GUIANA,

VOL. II.



IN pursuance of the plan stated at the conclusion of the First Volume of "THE FISHES OF GUIANA," we now resume the subject, in describing the remaining part of Mr. Schomburgk's Drawings, and allotting to them, as nearly as we can, in the absence of specimens, their proper station.

We shall conclude this Volume with a summary of the species which have been observed by other Naturalists in the Fresh Waters of South America, so that the Volumes may be made as useful as possible, in the present state of our knowledge of the Ichthyology of those immense rivers.

POSTSCRIPT.

LETTERS have been received by the Geographical Society from Mr. Schomburgk, by which it appears that he had explored the river Takutu to its source, in about $1^{\circ} 45'$ N. Lat. The Takutu is a tributary of the Rio Branco, into which it falls at San Joachim; and its source is so far to the eastward, that Mr. Schomburgk procured bearings of his old acquaintance, the Wauguwai and Amucu Mountains, near the junction of the Yuawauri with the Essequibo. The highest mountains are granitic, with masses of quartz, but no igneous rocks were seen. Mr. Schomburgk has made observations on the magnetic intensity at Waraputa, at Pirara, and near the sources of the Takutu, &c. One of the silver medals of the *Société de Géographie* of Paris has been awarded to Mr. Schomburgk for his researches in Guiana.



Belone? Guianensis.



DESCRIPTIONS.

THE first fish which we have to notice, and which naturally follows those with which we concluded the previous Volume, will belong to the *Esoces* or *Pikes*; these fish have been placed by some authors before the Salmon, by others after them and following the true Herrings; in either place, however, they show some alliance, particularly in their habits. The fish alluded to is referrible to the genus *Belone* of Cuvier, and may now stand here as

GUIANA GAR-FISH.

Belone Guianensis.

PLATE I.

L. GERAL, Pira-poco (a general name for a sharp snouted fish). *Schomb. Drawings*, No. 56.

THIS drawing exhibits the same form as that of the *Esox cancilla* of Hamilton Buchanan's *Fishes of the Ganges*, pl. xxvii., and apparently also of the two other fishes he describes under the same genus.

From the European examples of *Belone*, these as well as the Guiana fish differ in the tail being rounded or fan-shaped instead of being forked; the anal fin is also shorter than the dorsal, which is not so in the others; and in Swainson's system, these are made to assist in generic value. The European species of *Belone* are sea fishes, but those of India alluded to, inhabit, according to Buchanan, the ponds, ditches, and smaller streams. That of Guiana "seldom exceeds fifteen inches in length, and was taken in the river Padauri in February; it feeds on insects, beetles, and wood-ants." The scales are very small and deciduous. The intestines are straight, and the air-bladder is single and extends to the anal fin." The upper jaw is slightly shorter than the under, and the edges of both are represented as thickly set with minute teeth. The colour of the whole fish is a uniform dark olive, paler on the sides, and inclining to bluish on the belly. The ventral fins are tipped with orange-red, and the anal has a band of the same colour along its outer edge.

RED-BELLIED SCIENA.

Sciæna? rubella.

MACUSI, COVA ; WARRAU, Oborahai ; CREOLE, Bashaw ;
L. GERAL, Piscada.

THIS fish undoubtedly belongs to the *Sciænoides* of Cuvier and Valenciennes, having a double dorsal fin; but without specimens, it is extremely difficult to refer it to any of their individual divisions. It is allied to *Corvina*, *Ombrina*, and *Micropogon*, and will most probably be found to range in one of these, several species being found in the estuaries of the South American coasts, and in the lakes and rivers of the New World. " This fish, about two feet in length, is taken plentifully in most of the rivers of Guiana, and is much esteemed for food ; they are particularly plentiful in the Barima and Corentyn rivers, where, at some seasons of the year, they are the principal animal food of the Warrau Indians. The scaling is rather small ; opercle terminates in a point ; the gill-covers and whole head are entirely covered with scales ; eyes yellow ; nostrils double, and placed near them ; teeth fine, in single rows. The body is silvery blue on the back, varying to rose-colour on the belly and tail ; lateral line much

bent. (The dorsal, pectoral, and ventral fins are blue, of a darker shade than the back; the anal fin, with the tail, is rose-colour.) They are fished for with long lines, which are towed after a canoe, pulled quickly: the hooks are baited with small fish; sometimes with feathers, resembling an artificial fly."

D. 9/34—P. 16—V. 6—A. 2/6—C. 22—Br. 5.

CORVINA.

We have next a fish which we arrange in the genus *Corvina* of Cuvier, and the Brazilian Fishes. The greater number of species inhabit the sea; but we have some in the estuaries of the Ganges, and also in the lakes of North America. The fish given by Spix, *C. adusta*, is from the Brazilian seas; it is represented of a uniform olive-brown, paler beneath, tinted with reddish yellow about the head and opercula.

“CORVINA, Cuvier.—Corpus elongatum plus minusve compressum squamis non adeo magnis undique tectum. Caput minus compressum, squamis variæ magnitudinis omnino abductum; rostrum inflatum obtusissimum, parva prominens, cavernosum. Operculum postice aculeatum, latum; suboperculum angustum, præoperculum aculeis majoribus minoribusve armatum. Membrana branchiostega lata, radiis 7. Apertura branchialis sat magna. Os mediocre sub rostri apice, arcuatum, supra in ossibus intermaxillaribus et infra in mandibularibus lata fascia dentium velutinorum minutissiorum armatum. Pinnæ dorsales duæ; anterior aculeis gracillibus longioribus, posterior longior radiis fissis basi tantum squamatis suffulta. Pinna caudalis basi plus minusve squamata. Pinna analis parva antice aculeis majoribus minoribusve armata. Pinnæ ventrales longe accuminatæ, aculeo primo tenui; pectorales longiores accuminatæ.”

THE CORVINA OF THE ESSEQUIBO.

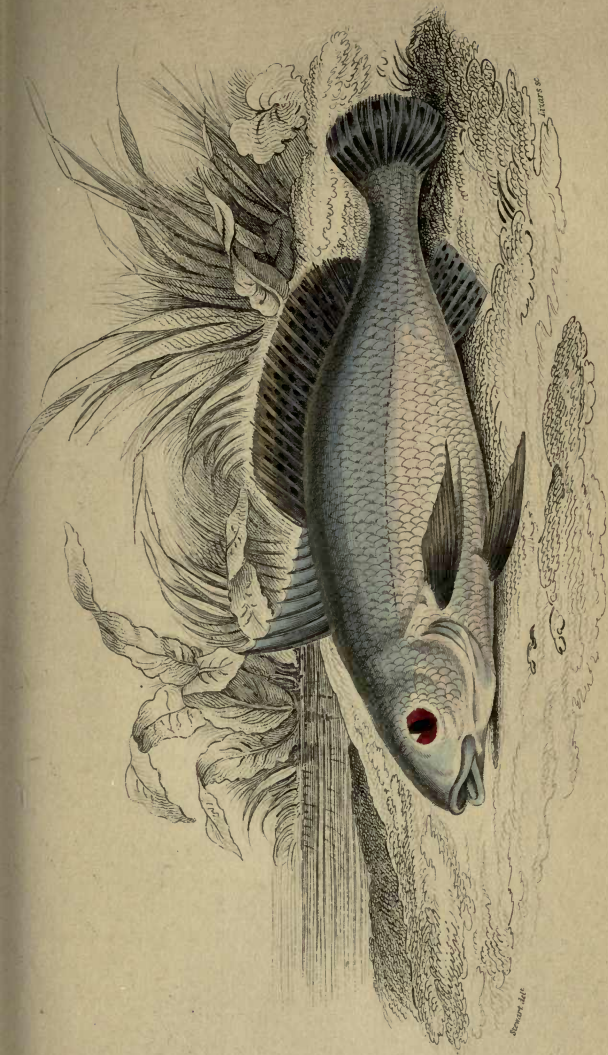
Corvina grunniens.

PLATE II.

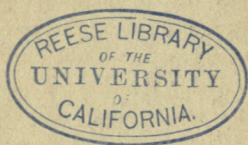
ARAWAK, Durro-durro; Carib, Spoca; L. GERAL, Piracuta.
Schomb. Drawings, No. 2.

THE fish represented on the opposite plate appears to range in the genus to which we have referred it, and resembles, in form and shape, the *C. adusta* of Spix. The drawing wants the scaling which in that species and in some others, represented on the plates of Cuvier and Valenciennes, seem to cover the whole cheeks and snout. Several species make a hoarse noise and have received their provincial appellations in consequence; the *C. ronchus* of Valenciennes is thus named; at Maracaibo, it is called "*el ronco*" and "*el roncador*;" and at St. Domingo and Surinam, other species have received synonymous appellations.

"The fish from which the drawing was taken was killed at Comacca Island, in the Essequibo, in September; the flesh is good, but bony; they are taken by the hook and line, as well as shot with the arrow, but are not very plentiful. They make a curious grating noise under a canoe, when she



Corvina grunniens.



is tied up near their haunts. The colour is of a silvery blue; the dorsal and anal fins spotted with black; the scaling of moderate size, fringed, and adhesive; lateral line straight and near the middle of the body; head depressed; ventral fins a little behind the pectoral. Nostrils double, and situate near the eye; eyes oval with the iris red; the mouth terminal, jaws nearly equal; teeth fine, in single rows in both jaws; gill-covering scaled, and smooth at the edges. Feeds on insects and small fish, and is generally found among the rapids."

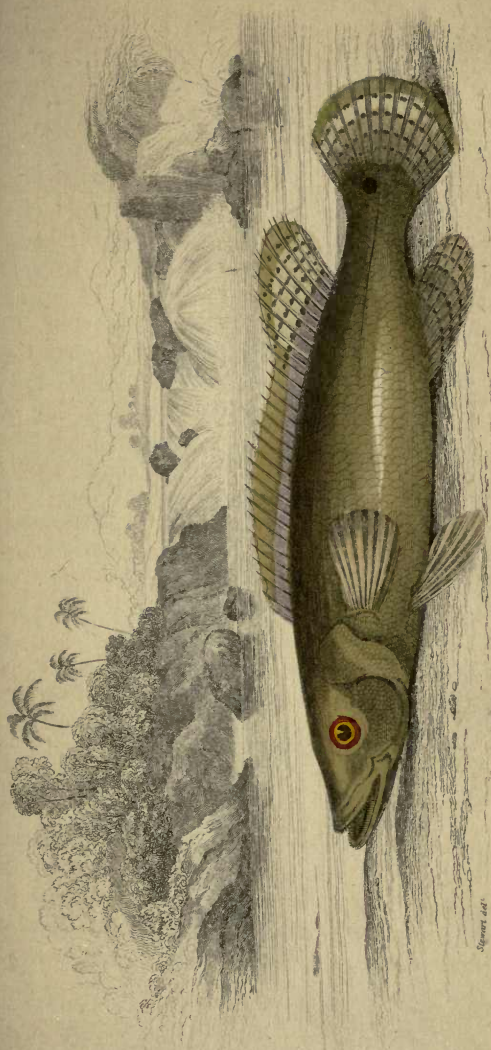
In some of the species the air-bladder is described as fringed with numerous appendices; in others, such as *C. oscula*, Val., it is quite simple, and very large. The stomach of this fish presented pyloric appendices, and was filled with the debris of fresh-water shells. In the *C. nigrita*, Val., the air-bladder is large and lengthened to a narrow point; on each side of the anterior part, there arises a small short process, which divides into five branches; from the two interior of these spring two very short branches; while the three others, equally divided, are prolonged into lengthened filaments, which are retained by a fatty cellular tissue upon the sides of the bladder.

CYCHLA.

In the "Brazilian Fishes" we have two forms of *Cychla* represented, one of a lengthened form, strong lips, and a long dorsal fin; the other of a deeper form, with the dorsal fin undulated where the separation takes place, in these fishes having that member divided, and having the body marked with conspicuous ocellated spots or markings. The examples will be noticed in succession, but we give first the characters of Agassiz, which agree best with the first or lengthened form,—resembling that of *Latilus* or *Pinguipes*, but with a short anal fin.

"CYCHLA, Agassiz.—Corpus elongatum, subcompressum, squamis minoribus obductum. Linea lateralis interrupta. Caput productum, subacuminatum. Operculum postice acuminate, suboperculum postice prolongatum, nec non buccæ squamatae. Os magnum surdum subinflexum; ossa intermaxillaria ambitum oris superiorem totum sustinentia valde protractitia, ut et mandibularia fascia lata dentium velutinorum obsita. Pharynx neque dentibus velutino armatus. Membrana branchiostega radiis 5. Pinna dorsalis longa; pars ejus anterior aculeata posteriore molli longior. Pinna analis brevis. Pinna caudalis rotundata."

The annexed Plate, taken from the fishes of Spix and Agassiz, will exhibit this form. There is an uncoloured drawing in the Collection, which we venture to refer to it, though that represented on the former is said to inhabit the Brazilian sea.



Cichla labrina

Lacoste.

Stewart del.



LARGE-LIPPED CYCHLA.

Cychla labrina, AGASSIZ.

PLATE III.

Cychla labrina, Spix, tab. xlii. p. 99.—WARRATT, Saboa.*Schomb. Drawings*, No. 21 ?

WE have an uncoloured sketch, which we refer to the fish of Spix above quoted, though some differences occur, such as the absence in our sketch of any markings on the tail, dorsal and anal fins, and in the more angular form of the posterior extremity of the latter members. The notes which accompany the Number are as follow : “ This fish is common in the lower as well as upper parts of the rivers ; they are good food, and grow to six or seven inches long ; they take bait. The figure, as represented by Spix, is of a blackish olive, which would probably be much brighter if seen when the fish was newly taken.

“ Another species,” Mr. Schomburgk continues, “ very much resembling this, was killed in the Padauri, but differs in the number of rays and vertebræ ; it grows to the length of eighteen inches ; the flesh is good, and it takes bait readily, but does

not bite in the night, hence it is called "Sunfish." The body is long and nearly round; the snout flattened; nostrils single; lips fleshy; teeth all fine, in double or triple rows. Gill-covers smooth-edged and scaly, opercle pointed. Eye placed near the middle of the head, coloured orange and black; air-bag single, and as long as the cavity of the body."

Of the first, or what we consider *C. labrina*, the following fin formula is given; the remarks on the second species may, we think, have reference to our next Plate, on which there is no Number or Notes. The formula of the fins of the first is.

D. 19/14—P. 16—V. 1/5—A. 3/11—C. 16—Br. 5—Vert. 34.



Cichlas fasciata.



BANDED CYCHLA.

Cychla fasciata.

PLATE IV.

No Number or Notes accompany this drawing. The colour of the entire fish, together with the fins, is of a dull blackish blue, paler beneath, and on the first part of the dorsal fin, the body being transversely banded with numerous dark bands; in the drawing they amount to thirty. The iris is coloured bright orange-red, and appears very conspicuous in the dark fish. The first and second rays of the pectoral fin are of a pale yellowish brown, and appear strong,—almost spines.

The next fish, of a similar form, will present a striking contrast in its brilliant colouring

RED-HEADED CYCHLA.

Cychla ? rutilans.

PLATE V.

Schomb. Drawings, No. 71.

OUR Notes are also very scanty in regard to this species, but the Drawing is more than usually minute. "It was taken in the Rio Branco in April. The teeth were, a row in each jaw, and some in front; tongue round and fleshy. The scaling was very small, fringed, and deciduous. Small fish were found in the stomach. The air-bag single, pointed, and as long as the body." The upper half of the head and body is of a delicate pale green, continued on the rays of the dorsal, anal, and caudal fins, the membranous parts of which are bluish grey. The lower half of the head, the breast, and ventral fin, are rich vermilion-red, darker on the upper lip and edges of the opercle and preopercle; the remaining part of the lower half of the body, to the centre of the insertion of the anal fin, is pale rose-colour, shading into the green above. The extremity of the body, below the curved part of the lateral line, is greenish grey; the pectoral fin is wood-brown; at



Cychla rutilans

38 3 1/2 in

Newark, N.J.



the insertion of the tail and termination of the lateral line, there is a round spot of deep black, and a dull band of the same colour bounds the soft extremity of the anal fin.

This last fish, in many parts of its form, and in its bright colour, resembles the *Serrani*, and it is possible that it may stand described under that generic appellation; at the same time, our drawing and short notes agree with the characters we have printed from the Brazilian Fishes.

The second form of *Cychla*, and that to which we feel inclined to restrict the appellation, is represented by the *C. monocus*, Spix, tab. lxi.ii., by those described in the second volume of Humboldt's Zoological Rescearches, and by the *C. ocellaris* of Schneider. It belongs to the *Labrinæ*. The fishes composing it are all brightly and gaily coloured, and are remarkable for their very decided banded and ocellated markings, which also prevail in all the species of which we now possess drawings. This genus of Bloch and Cuvier, to which most modern Ichthyologists refer these fishes, is not recognised by Valenciennes, who seems to have distributed them through other groups. In the *Histoire Naturelle des Poissons*, he says, "Mais le genre *Cychla*, composé d'abord d'une maniere trop vague a été reduit par nous, a des especes de la famille des *Labres*." Without having examined specimens, we should not like

to differ from such authority ; at the same time, the forms represented in these works and drawings appear very natural in every respect, and would seem entitled to a generic separation. At the end of the volume, we have brought together the other species which have been represented by Humboldt and Spix, and now represent those which were found by Mr. Schomburgk.



Cichla flavo-maculata



YELLOW-SPOTTED CYCHLA.

Cychla flavo-maculata.

PLATE VI.

Pintado.—L. GERAL, Lucanari. *Schomb. Drawings*, No. 45.

THIS beautiful fish inhabits the Rio Negro and Adauri, and is preferred to most others for the delicacy of its flesh. The scaling is rather small, elliptical, slightly fringed, and adhesive; lateral fin arched until over the ventral fin, when it bends to the middle of the body, and runs thence to the tail (see Drawing); head compressed; ventral fins placed under the pectoral; air-bag long, covering the spine the whole length of the cavity of the body; nostrils single, round, situate near the eye; eye round, iris black and yellow, and situate over the gape of the mouth; tongue pointed, fleshy; lower jaw slightly produced; teeth fine, thickly set in each jaw; intestines straight. The gill-opening is semilunar, the cover having all the bones scaled; the roe is moderate-sized and double. It lives but a short time after being taken from the water, takes bait and the artificial fly rudely constructed by the Indians; it will also bite at a red pepper or a red rag. They are perfect ty-

rants when they are plentiful, and being a swift swimming fish, destroy great numbers of smaller fishes. The body is greenish lake, with three black bars, three rows, and several scattered yellow spots on the head several black spots, and a peacock eye on the insertion of the tail. Dorsal fin and upper part of tail, indigo spotted with light blue; ventral, anal, and lower half of caudal fin vermilion pectoral greenish; gill-rays vermilion; belly lighter than the other parts of the body. They grow to two feet in length." The formula of the fins is,—

D. 15/16—P. 16—V. 1/5—A. 10—C. 23—Br. 5.



Cichla nigro-maculata.





BLACK-BLOTCHED CYCHLA.

Cychla nigro-maculata.

PLATE VII.

L. GERAL, Lucanari. *Schomb. Drawings*, No. 46.

"THIS is another species having the same habits and residing in the same situations with the last; they are taken in the same way, and are equally esteemed for the table; they grow to about eighteen inches in length. The head is compressed, but differs from the last in having a lump on the top; the body and head are irregularly spotted with black, which vary in different individuals; a peacock-eye at the insertion of the tail; body greenish yellow, light on the belly and sides; gill-rays, ventral, anal, and lower half of caudal fin, vermilion; upper half of caudal fin, and dorsal, indigo; the scaling is small and slightly fringed, elliptical, and adhesive; the lateral line is divided; ventral fins under the pectorals; air-bag single, as long as the cavity of body; nostrils single, near the eyes; eyes round, over the gape, with red and yellow iris; the lower jaw is produced; teeth as in No. 45 (the last); intestines form no flexures, but are

straight; opercles scaly, with smooth edges; gill opening semilunar; the milt double, half the length of the cavity of the body; roe also double, of like length. Lives half an hour when taken from the water." The formula of the fins is,—

D. 16/17—P. 14—V. 1/5—A. 3/11—C. 36 ?—Br. 5—

KL08, 16 pairs.



Litars sc.

Cichla argus.

Stewart sc.



ARGUS CYCHLA.

Cychla argus, VALENCIENNES?

PLATE VIII.

C. argus, Val., Humb. Zool. Obs. ii. p. 169.—ARAWAK and MACUSI, Lucanani; L. GERAL, Lucanari; CREOLE, Sun-fish. Schomb. Drawings, No. 47.

" THIS species is found in the Essequibo as well as in the Rios Branco and Negro, resembles the last in its habits, being found in the same situations. The gill-rays, throat, ventral, anal, and half of caudal fin, vermilion; tail with a peacock-eye; large spots of black on the sides, edged with yellow, giving it a gilt appearance; the upper part of caudal fin and dorsal is indigo spotted with light blue; the eye yellow, situate over the gape; nostrils near the eye; lower jaw slightly produced; teeth as in the two last species; opercles scaly, with smooth edges; scaling small, elliptical, and adhesive; lateral line divided as last; ventral fins under the pectorals; air-bag single, length of the cavity of the body; anus situate near the anal fin; gill-opening semi-lunar; roe double; half the length of the cavity of the body. It lives only half an hour after being

taken from the water, and is taken in the same way as Nos. 45 and 46, also with the arrow."

To the conclusion of Humboldt's observations on these fishes, Valenciennes adds the description of one from the Museum of the Garden of Plants, which seems to agree with the above Number of Schomburgk's drawings. He states the spots to be ocellated with white, with, however, a? The spirit may have withdrawn the colour. The formula of the fins of the Parisian specimen is,

D. 18/15—P. 12—V. 5—A. 5/9—C. 18

Cichla trilineata



Stewart del.



TRIPLE-BANDED CYCHLA.

Cychla trifasciata.

PLATE IX.

L. GERAL, Lucanari Grande. *Schomb. Drawings*, No. 59.

OUR Notes relative to this species are very scanty ; " it was met with in the Rio Negro and in the Padauri in the month of February ; it continues alive only a short time when removed from the water ; its food, other fishes ; teeth are thickly set in both jaws ; tongue pointed and fleshy ; the intestines straight." The drawing is of the same size with the others, the outline somewhat similar ; but there is a sudden rise immediately posterior to the head, after which it falls again and rises before the insertion of the second portion of the dorsal fin ; after which it is suddenly narrowed, as in the others, to the insertion of the tail. The colour of the drawing above is a dark olive-green, shading into yellow, slightly tinged with green on the lower half of the fish, or below the lateral line, which bends somewhat, following the dorsal outline. The opercula and head are marked with irregular shaped spots of black, and the middle of the fish is crossed with three dark, nearly equidistant, oval marks, the first arising

nearly after the insertion of the pectoral fin. Above the lateral line at the insertion of the tail, a large black spot, ocellated or surrounded with an interrupted yellow ring. The dorsal fin and upper lobe of the tail is indigo blue, the latter spotted between the rays with black ; the pectorals of a greenish yellow ; the throat and rays of the branchiæ, anal and ventral fins, and lower lobe of the tail, vermilion red. Although some of the other specimens are banded with black, we have designated this fish from these markings, which alone stand out from a dull uniformly coloured surface, without the interruption of numerous spots of any other colour.



Cichla rubro-ocellata.



RED-SPOTTED CYCHLA.

Cychla? rubro-ocellata.

PLATE X.

L. GERAL, Acarra. Schomb. Drawings, No. 38.

THIS fish, in its form commencing to vary from those which we have considered as typical of *Cychla*, will lead us on to the next; it is altogether a deeper fish, but retains traces of the bands so prevalent in the others, the brilliant colours, and is marked with the peculiar ocellated spots we have observed throughout; the anal fin also is of much greater extent, and the three first rays are spined or strong. The lateral line, however, as represented in the figure, is parted towards the tail. Mr. Schomburgk observes, "This is also a native of the Rio Negro and its tributaries, and is called *Acarra*, which is the common name for the whole genus. It is a beautiful fish, greenish on the back and yellow on the belly, variously banded and spotted with black; the caudal fin is scaly half its length, and spotted with vermilion; on its insertion is a peacock-eye, and another on the soft rays of the dorsal fin; the eye is bright orange, and situate near the middle of the head; the gill-lid scaly;

teeth fine, and in both jaws; lower jaw a little produced; lateral line parted. The scaling is rather large, fringed, elliptical, and not very adhesive; the head compressed and ventral fins a little behind the pectorals; the nostrils single, and situate at half distance from the eye; the snout and tongue pointed. They are taken by the hook and with arrows, and are good and well-tasted fish." The peacock-eyes, or ocellated spots, are dark vermilion-red with a large black centre, and the base of the soft part of the dorsal, the anal fin, the whole base of the tail, and part of the extremity of the body, are thickly but irregularly studded with small spots of the same red tint. We have little doubt also that the teeth and their distribution in this fish are different from the preceding ones under the same generic name, and consider that an examination of specimens would place it distinct. The formula of the fins is

D. 12/19—P. 13—V. 1/5—A. 3/14—C. 15.

CENTRARCHUS.

Allied in form to the fishes we have just described, we have one or two species which appear to belong to the form denominated by Cuvier and Valenciennes *Centrarchus*, and of which they give the *Cychna ænea* of Lesseur as typical. They place this form, and that to which we have referred another fish, *Pomotis*, next each other, and discuss them in the same chapter, distinguishing that which we have now before us principally by the greater number of spines to the anal fin, while in *Pomotis* they are few, generally three in number, and the operculum is terminated in an ear-like membrane, which has suggested the generic name. Both forms, so far as known, are found chiefly in the fresh waters of North America, feed on insects and aquatic larvæ, and several of them are used for the table. The characters given in the "Histoire Naturelle des Poissons" are nearly as follows :

"CENTRARCHUS.—Has the body oval, compressed; a single dorsal fin; teeth "en velours," upon the jaws, anterior to the vomer, upon the palatine bones, and on the base of the tongue, the preoperculum entire, end of the operculum in two flat points."*

* Translated from Hist. Nat. des Poiss. iii. p. 84.

In the new edition to Cuvier, by his pupils, the characters are given, "Acanthopteriigiens percoides a six rayons branchiaux, a un seule dorsale, a preopercule lisse, et a dents en velours sur les machoires, sur les palatins, sur le chevron du vomer, et sur le base de la langue."



Centracanthus cyclops.



CYCHLA-LIKE CENTRARCHUS.

Centrarchus cychla.

PLATE XI.

L. GERAL, Accari. *Schomb. Drawings*, No. 62.

WE have placed this fish as a *Centrarchus*, but acknowledge that we have done so merely because it recedes from the type of *Cychla* as given by Cuvier and Humboldt ; as we have repeatedly had occasion to remark, it is impossible from the drawings to fix the genera with certainty, particularly when they depend on some of the minute distinctions of the teeth and their position, as employed throughout the volumes of the “*Histoire Naturelle des Poissons* ;” and of the present fish and that which follows, the plates are given to direct attention, and for the use of future travellers ; for we have no doubt that from the figures we have given, the fish would be at once again recognised ; and from the generic characters, printed from Valenciennes, it may be ascertained whether we are correct, or if not, in what points they vary from them. In the markings, this fish still exhibits the banding of many of the *Cychlæ*, and dark spots, but without any of the ocellation so prevalent in the others ;

the colours, though still bright, are not nearly so vivid; the angles of the opercle and pre-opercle are more acuminate, and run almost to blunt spines. The scanty notes supply us with the following information: "Rio Negro; caught in March; takes bait; good fish for the table; grows twelve inches long; worms found in stomach." The colouring will be best understood from the figure. The body is of a deep greenish grey, having indications of seven dark bands, which are interrupted in the middle or on the lateral line; a single conspicuous black spot is placed near the insertion of the tail; the lower part of the body, below the pectorals and anterior to the anal fin, is vermilion-red; the dorsal and anal fins are pale indigo-blue, barred with reddish brown at their posterior extremities. The formula of the fins are,

D. 15/12—P. 14—V. 1/5—A. 5/10—C. 16.



Centropomus niger.



DARK CENTRARCHUS.

Centrarchus niger.

PLATE XII.

OF this species we do not possess available Notes, and a representation of the drawing is given to complete the Ichthyology of the Guianese waters so far as our materials will allow, and to call the attention of other travellers to the wanting points. The figure of this fish is in length six inches and three-quarters, in depth about three; the colour is entirely a dark bluish black, paler beneath; and on the belly, anterior to the ventral fins, the edges of the mouth, and the borders of the opercula and pre-opercula, indigo blue; the iris is coloured orange-red; the dorsal fin is represented as having seventeen spiny rays, ten soft; the ventral with six spiny, eight soft, and both without any appearance of spotting. The ventral fin has a strong round spine before the first soft ray, which considerably exceeds the others in length. Taken in the Rio Negro in February.

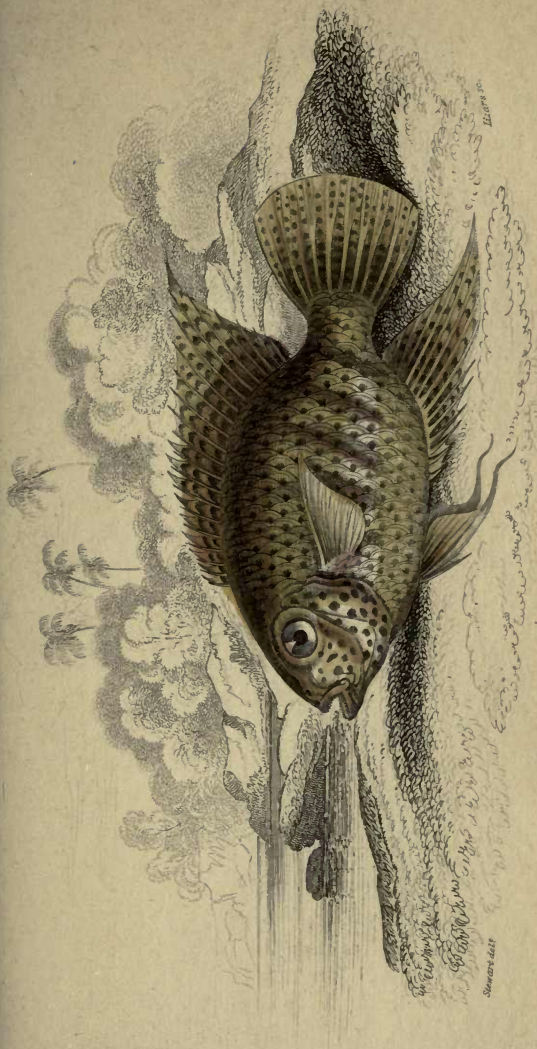
DARK-MARKED CENTRARCHUS.

Centrarchus notatus.

PLATE XIII.

THIS species, of which we have no Notes, somewhat resembles the *C. æneus* of Valenciennes, but the head is covered with a dark spotting, and there is no large spot on the opercle. In length it is eight inches and a half, in depth three and a half. The colour is a uniform olive-brown, five indistinct banded marks running below the middle of the fish, the last entirely across at the termination of the dorsal and anal fins. At the base of each scale there is a dark rich umber-brown spot, and the whole lower part of the head and opercula are marked with rather large irregularly rounded spots of the same colour. The dorsal and anal fins are large, and are marked between the rays with dark spots which run in bands. The tail is similarly spotted; the ventral fins are lengthened.

D. 16/12—A. 7/12—C. 16.



Dark-marked Centracanthus





Centrarchus? vittatus.

12198 8.

Stewart del.

on 3rd July 1840
at 5 1/2 m



BLACK-BANDED CENTRARCHUS.

Centrarchus? vittatus.

PLATE XIV.

NEITHER of this fish have we any Notes; the drawing alone, finished with considerable detail, is before us; the general form is that of the two preceding species, but the scaling is proportionally larger, and the caudal fin, very slightly forked, has the lower lobe shorter than the upper. The jaws are equal, and appear furnished with minute teeth on their edges; the outline of the opercula is rounded, and the anal fin seems to possess only three spiny rays, which, in the system of Valenciennes, would bring it near to or in the genus *Pomotis*. The general colours are represented to be bluish green on the fins and upper parts, shading into silvery on the belly, and the whole is marked with darker bands of the common tint. The opercula and upper lobe of the tail are spotted with pale blue; and below, rather in front of the eye, and between it and the maxillary bone, there are three oblong streaks of bluish green, the last reaching to the angle of the mouth; but the most conspicuous marking in the fish is a line of about a quarter of an

inch in breadth, of a deep black colour; running from the upper part of the operculum, or opposite the eye, to the centre of the tail; and having on the extremity of the body, above its termination, a circular spot of the same colour. The iris is pale yellow. The dorsal fin, so far as we can count from the drawing, has fourteen spiny and ten soft rays; the anal $3\frac{3}{7}$; the ventral $1\frac{1}{5}$; the first being of considerable strength; the first soft ray prolonged considerably beyond the rest. Length of the drawing is nearly five inches, depth two inches.



Lacépède

Centrarchus rostratus.

Sevart del.



LONG-SNOURED CENTRARCHUS.

Centrarchus ? ? rostratus.

PLATE XV.

L. GERAL, Acaia. Schomb. Drawings, No. 60.

THIS prettily marked fish is also accompanied with few details; "it was taken in the Rio Negro in February; the teeth are a single row in each jaw; the gill-covers have five rays; the scales are large, elliptical and adhesive. Above, the colouring is clear olive, shading off about the lateral line, beneath which the lower half of the first is silvery; the tail also is olive, shading at the base into indigo-blue, and having a narrow band of the same colour near the extremity of the body; the remaining fins are yellowish brown and olive, and on the anal olive between the rays; on the dorsal having the caudal aspect of the spiny rays tipped with reddish orange. The mouth and snout are rather lengthened; the jaws even; the opercula terminate posteriorly in a slightly acuminate point or angle, and the space between the pectoral and ventral fins are marked with small irregular blotches of reddish orange; on the angle of the preoperculum there is an irregular roundish spot of black, and on the

centre of the body there are two large oval spots of the same conspicuous colour. The iris is coloured orange. Length of the drawing four inches four tenths, depth one inch and a half.

D. 13/9—P. 14—V. 24—A. 3/3—C. 16—Vert. 24.

PLATE XV.

J. GEN. ACAD. SCIENT. DRAWING No. 60.



Centracanthus cyanopterus



BLUE-FINNED CENTRARCHUS.

Centrarchus? cyanopterus.

PLATE XVI.

MACUSI, Camarapaca; L. GERAL, Acara Tinga ("Tinga" is Stinking). Schomb. Drawings, No. 19.

WE place this fish with *Centrarchus*, as appearing nearer to it than any other; though we are by no means satisfied that it will stand here; there appear to be only three spines to the anal fin. "This fish is a native of the Essequibo, and is drawn of the natural size; the colour light green, varying to blue on the side, and dull rose on the belly; the eye is large, yellow, and red, and situate near the top of the head; the gill-lid scaled, with smooth edges and edged with rose colour; pectoral fins rose, ventral, placed under the pectoral, blue spotted with brown; dorsal and caudal ditto; anal blue spotted with rose; the jaws are equal; lips fleshy; teeth fine single rows; lateral line divided. They live an hour after being taken from the water, take bait, and prefer creeks and still waters to the fast running streams. Great numbers of them are annually destroyed, together with other fish, by poisoning their resorts when the rivers are low. Of this species I

have seen two middle sized canoe-loads killed at one time; they are well-flavoured but bony, and are said not to exceed the size of the one represented. I have seen one much like this in the river Padauri, a tributary of the Rio Negro, 12 inches in length; it had two or three blue stripes on the head, but I had not the means with me to make a drawing of it. The scaling is large and slightly fringed."

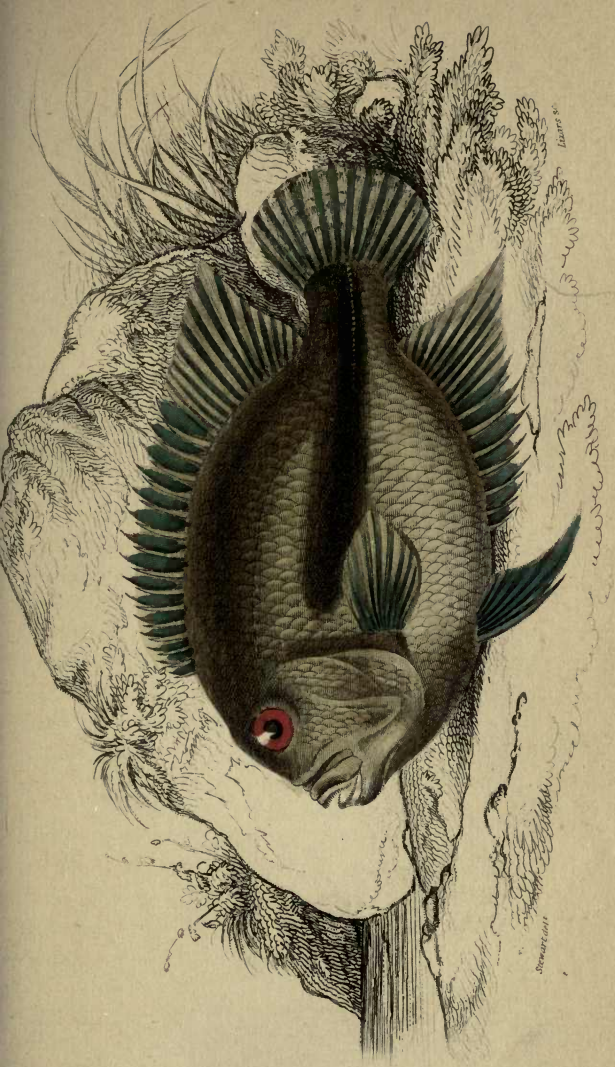


POMOTIS.

The next fish which occurs, we cannot determine generically with satisfaction; it ranges among or near to the *Centrarchi* of Valenciennes, and would come close to *Pomotis* of that author, were it not for the numerous spines on the anterior part of the anal fin, which in that genus is rather artificially restricted to three or four; the teeth scarcely appear to agree with either. *Pomotis*, in which we provisionally place it, is found in the fresh waters of North America, consisting there of a single species, of which there is a good figure in the Northern Zoology of Dr. Richardson; a second species is indicated by Valenciennes from Buenos-Ayres. One of the distinguishing marks is the ear-like flap which extends along the posterior margins of the opercula; and it is probable that from the little development of this part and other modifications of structure, that it may range more properly with *Centrarchus*. The present title, however, will call attention to the presence of *Pomotis* in South America, and we add the characters.

“ *POMOTIS*, *Cuvier*.—Body broadly oval, compressed; dorsal fin slightly emarginate; the hinder part of the anal

with a sheath of scales at their base, the spines of these fins moderate; an elongated membrane or flap at the angle of the operculum; caudal fin lobed; ventrals under the pectoral, with a pointed basal scale." *P. vulgaris*, Swain.



Pomotus fasciatus.



BLACK-BANDED POMOTIS.

Pomotis ? fasciatus.

PLATE XVII.

L. GERAL, Acarra. *Schomb. Drawings*, No. 37.

THE scaling of this fish is middle-sized, fringed, elliptical, and adhesive; the lateral line divided, one part arched till under the last spiny ray of dorsal fin, the other beginning when that ends, and moving straight to the middle of the tail; a little lower it is of a greenish brown with a broad black stripe running along the middle of the body; the webs of the fins are bluish, caudal fin somewhat rounded; eye large, and situate near the top of the head; iris orange; teeth fine, and thickly set in both jaws; tongue pointed; nostrils single, near the snout; gill-lid covered with scales, the opening semilunar; the ventral fins are placed nearly under the pectorals. They take the hook, baited with small fish, readily; and are much used for food in the bios Padauri and Negro. The air-bag is double, one half oval and the other pointed and long; milt double, half the length of the cavity of the body; intestines make three flexures. The appendage to the gill-flap appears like a prolongation of the edge

as a membrane, with a regularly rounded outline, but with no jutting-out appendage as in *P. vulgaris*; the teeth, though fine, are represented of considerable length, particularly on the upper jaw. The length of the drawing is eight and a half, the depth four inches; the colour of the fish yellowish umber-brown, interrupted by the broad black line running along the centre of the body. The formula of the fins is,

D. 16/14—P. 13—V. $1\frac{1}{5}$ —A. $8\frac{1}{12}$ —C. 16—Br. 6.

We possess a slight uncoloured sketch of another fish, which appears nearer to *Pomotis* than the last; the teething is represented as more minute; there appears to be a slight auricle to the operculum, and the anal fin has only three spiny rays. We give an outline also to direct attention, with Mr. Schomburgk's short notes.

BONO OF THE WARRAU INDIANS.

Pomotis? bono.

PLATE XVIII.

ARAWAAK, Siballi; * WARRAU, Bono; MACUSI, Misshaw; L. GERAL, Accara Pishuna. *Schomb. Drawings*, No. 17.

THIS fish is found in all the rivers of Guiana, and in pools and marshes; the colour is a bluish black; it is taken with the hook, and great numbers are killed by the negroes when the trenches on the estates get dry; they are indifferent food, being dry and bony. The body is compressed; mouth rather small; jaws equal, and armed with single rows of fine teeth; the eye is red; opercles scaly, with smooth edges; nostrils single; lateral line divided, one part arched running near the back for two-thirds of its length, the other commencing lower and running straight to the middle of the tail; the tail is a little rounded, scaling large and rough, fringed, and adhesive. Length of the drawing six inches, depth two and a half.

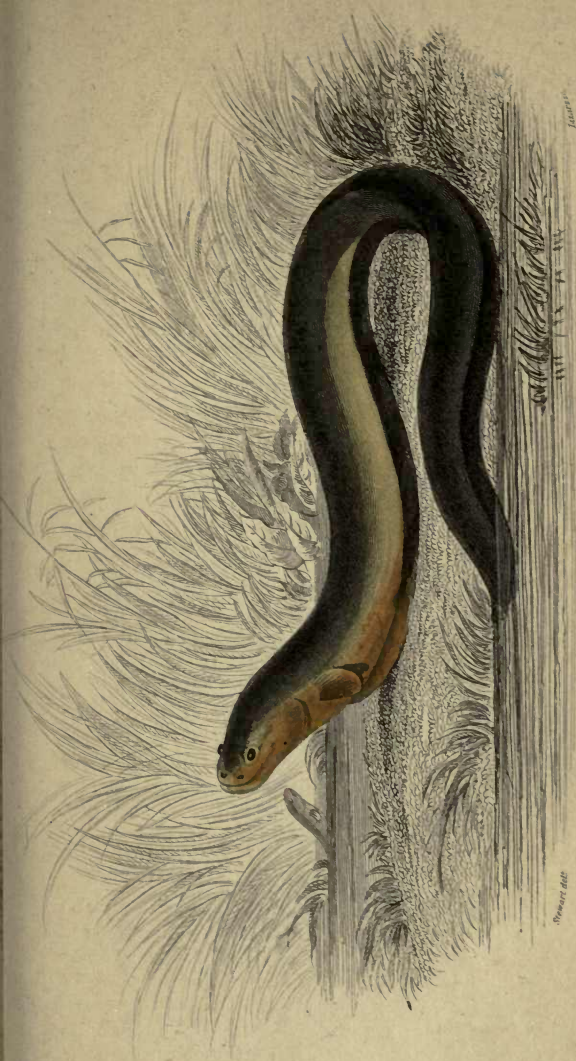
D. 14/10—P. 13—V. 1/5—A. 3/8—C. 16—Br. 5.

* Siballi is the Arawaak name for many species. SCHOMB.

GYMNOTUS.

Of this remarkable and far-famed form two examples occur, one the *G. electricus*,* the other a small species of a dark colour, and crossed with black diagonal bands. The notes relating to either, we regret to say, are extremely scanty, and no mention is made, either of any aversion in the natives to secure them, or of any particular mode of capture employed by them.

* See account of its electric properties, from Humboldt given in Vol. XXVII. of the "Naturalist's Library," and which the Vignette Title of our present Volume is intended to illustrate.



Gymnotus electricus.



ELECTRIC GYMNOTUS.

Gymnotus electricus.

PLATE XVIII.

L. GERAL, Porrahi. *Schomb. Drawings*, No. 58.

“ TAKEN in the Rio Negro in February ; body long and slimy ; lips fleshy, roof of the mouth warty ; tongue round, fleshy,”—is all the note attached to the above number. The drawing is coloured of a deep bluish green above, shaded to a dull ochraceous colour on the snout, lips and anterior third of the lower parts becoming paler in the middle half of the body ; the anal fin is of a deeper shade than the upper part of the body, but at its origin patches of the ochraceous or yellow colour of the head appear on it ; the lower lip protrudes considerably beyond the upper.

We are not aware of a goo coloured figure of this species.

IRREGULARLY BANDED GYMNOTUS.

Gymnotus fasciatus.

PLATE XIX.

Schomb. Drawings, No. 35.

“ THIS species was found in the Rio Branco. The body is long, head depressed, lower jaw considerably larger than the upper; it is devoid of dorsal, ventral, and caudal fins; the pectoral, situate near the head, the anal reaching nearly the whole length of the body. The body is compressed, ending at a keel at the anal fin; scaling very small, deciduous, elliptical; lateral line running above the middle of the body; nostrils double, one pair on the snout, and one pair further back; eyes situate nearer the snout than the middle of the head, small, and of a dark colour; the tongue round and fleshy; teeth double rows, five in both jaws; the gill-lids smooth and opening in an oval hole. It lives an hour or more after being taken from the water, is used for food, and is taken with small hooks baited with worms. The intestines are long, and have appendices attached to the stomach and intestines. There are several species of this fish, varying in colour



Stewart del.

Lizart sc.

Gymnotus fasciatus



and size, found in the rivers of Guiana, but none have now come under notice on this expedition but the specimen from which the drawing was made, which is of the natural size ; it differs in colour from all the others."

Humboldt discovered another small species of *Gymnotus* in the river Madelina, which he has named *G. æquilabiatus*, to distinguish it from the others, which have a considerable inequality in the length of the lips, or rather jaws. It is used as food, and in some parts it was considered as a luxury. It possessed no galvanic properties. The form is somewhat like that which we have now figured, but at the caudal extremity tapers nearly to a narrow thread, from which it has received the provincial appellation of "*El Raton*." The colour above is dark olive, shading into silvery below the lateral line.

We have now examined all the drawings belonging to one great natural division of fishes, those with osseous skeletons ; in the fresh waters of any country the cartilaginous species are of rare occurrence, their large size and predaceous habits requiring for them a wider range ; several species of small rays, however, are found at a considerable distance inland in several of the Guiana rivers ; three, those of which we possess drawings, approach nearest to the genus *Trygon*, while a fourth we can reconcile with no characters to which we have access ; and it is possible that

these entirely fresh-water skates may be found to vary considerably in their structure and economy. Of the first, our author thus writes:—

“ We are informed by Linnæus that the *Raya*, or Rays, are exclusively inhabitants of the seas. I think a species has since been described by D’Orbigny as inhabiting fresh-water rivers; Guiana, however, possesses several species, which consequently will prove new to Ichthyology. Their form is not different from those of the salt-water rays, and they are generally armed with spines; some with the back more or less spiny, tuberculous, or smooth. The spine or prickle, in the fresh-water *Trygon* is an equally dangerous weapon as that of its congeners which inhabit the sea, and wounds inflicted with it cause frequently severe inflammation. As they generally frequent such places of the river where the bottom is sandy, and in which they bury themselves, in order the easier to entrap their prey, the Indians use the greatest precaution when they are obliged to draw their canoes over such shallow places. I have known several instances where, nevertheless, wounds have been inflicted, and a swelling of the part, and in some instances feverish symptoms have been the consequence. The Indians use sometimes the leaves of the aromatic guava (*Pisidium parviflorum*, Beuth), which grows so abundantly among the rocks in the rivers of the interior, and after having pounded them, they are put on the wound, but I do not think with much effect, at least not in those cases where I saw it

applied ; laudanum in the first instance, and afterwards warm poultices of cassada-bread to subdue the inflammation, appeared to me the most effective remedy. The pain which the wound causes to the individual appears to be excruciating ; no wonder, therefore, that the Indian is likewise under the idea that the spine which inflicts that wound is poisonous. The spine being serrated on each side with barbs and hooks, recurved towards the base, it may be expected that the wound becomes dangerous from its jagged nature, while the extraction must cause additional laceration. Dr. Hancock has known the part to mortify and to slough off, and then the healing process went on favourably. I have no doubt that much depends upon the state of health of the individual who is wounded, and the cases which I have witnessed fortunately never came to those extremes.

“ The spines are sometimes double, and I have seen an instance where there were three. One is generally larger than the other ; no doubt a provision of Nature, that in case one was to break off, the animal may not be entirely deprived of its weapon of defence. These barbs are deciduous, and their size depends much on that of the individual. The Indians of the interior use these spines to arm their arrows with ; but among many hundreds which I have seen, none reached the length of three inches.

I nowhere observed these rays in such abundance as in the river Tacutu, when that river was,

in April 1839, on its lowest level. As they afford tolerably good eating, we took some pains to secure them. The Indian is always armed with a sharp-pointed pole, which he thrusts before him when he is wading through shallow water which he thinks frequented by the sting-ray. The yellow colour of that fish, so much like the sand in which it buries itself, makes it the more dangerous; and as it strikes with the swiftness of an arrow, the wound itself would be frequently the first token of the approaching danger. The pole, therefore, serves as a protection to dislodge the ray, which darts swiftly forward when it finds that the enemy is superior in strength. The Indian rushes after it, and is generally skilled enough to pierce and transfix the ray with the pointed pole. His first operation, if he has been successful, is to cut off the tail with its dangerous weapon, which he cuts afterwards out, and preserves it carefully for arrow-points.

“ I have frequently observed that the rays, no doubt in consequence of the anguish when secured and transfixed by the poles, brought forth young ones. The embryos are, no doubt, as this is the case with *Squali*, developed in the ova-ducts or in the uterus. The spawn is otherwise wrapped in a strong flat shell of horny substance.

“ Shagreen is prepared from several species of rays in Europe; whether the rays of Guiana would ever become of economical use in that regard is much to be questioned, although they are to be found in such numbers; nor will they prove of

much interest to the gourmand; but I and my companions have fared on a worse dish than a stewed or boiled sting-ray during our peregrinations; we have never despised it when it constituted part of our entertainment in the wilds of Guiana."



MANY-SPINED TRYGON.

Trigon histrix ? D'ORBIGNY.

PLATE XX.

Trigon histrix, D'Orbig. Voy. dans l'Am. Meriod. Poiss. pl. 13 ?
 —CARIB, MACUSI, and WARRAU, Siparri; PORTUGUESE,
 Araya; L. GERAL, Jawawure. Schomb. Drawings, No. 14.

THE drawing before us approaches very near to the figure given by D'Orbigny under the name we have quoted; but the dark markings of the same shape, do not seem to be surrounded by a pale ring as they are in that figure. On our drawings there are two distinct large spines on the tail; in the others they appear as if united, while at the same time double. The dorsal aspect also, of the tail, is only represented and described as spined; while, in the figure alluded to, the sides also have each a row nearly to the very tip. In our plate the lower fish will serve to shew the kind of marking represented by D'Orbigny.

“ This species was killed in the River Roowa, and measures twelve inches in diameter. The colour is greenish brown, irregularly spotted over the body with black; on the tail is a row of fixed





spines and two moveable ones, the latter two or three inches in length, which, from their poisonous quality, and their being serrated, inflict a most severe wound, sometimes causing fever, and is very difficult to heal; they frequent the shallows where there are sand-banks, and persons wading there are often stung by them; they dig round holes, five or six inches in depth, in which they lay sometimes partly covered with sand. They are good food, and are taken by the hook and with the arrow. This fish is from two to three inches in thickness, whereas some of the others do not measure more than one and a quarter. The eyes are prominent; breathing holes, five on each side of the mouth; nostrils double, near the mouth; mouth semilunar; teeth, a file-like process. They feed on animal food, perhaps sometimes on vegetable, as their means of securing the former do not seem adapted for procuring a plentiful supply."

The letter-press to the Ichthyological plates of D'Orbigny has not yet appeared, so that we are ignorant of his observations regarding the fish, to which we have temporarily referred Mr. Schomburgk's drawing.

OCELLATED TRYGON.

Trygon garrapa.

PLATE XXI.

L. GERAL, Raya Garrapa. *Schomb. Drawings*, No. 69.

ALL the information that we have regarding this beautiful Trygon is, that it has "a series of rough flat teeth, in each jaw, like a file," and that it was taken in the Rio Branco in April. The general colour of the drawing is a yellow umber-brown, margined round the disk with pale scienna-red, the whole covered with yellowish white spots surrounded with a dark margin, large in the centre of the body, and gradually decreasing in size outwards, where they also become more numerous; a single row of weak spines runs along the upper ridge of the tail, which is also armed about its middle with one large serrated spine. In the drawing the length of the tail about equals that of the body from its insertion to the snout.



Trigon garrapa.





Lizars sc

Trigon stragyllopterus.

Shaw's coll



ROUND-WINGED TRYGON.

Trygon strogylopterus.

PLATE XXII.

Raya pintada. Schomb. Drawings, No. 70.

"TAKEN in the Rio Branco in April," is all the information we possess in regard to this curious species. It is remarkable for its rounded form, the diameter taken either way being nearly equal; the tail also only nearly equals about a third of the diameter, and, thick at its insertion, becomes rather suddenly attenuated, and is slender to the tip, which is armed at a short distance from its extremity with a single serrated spine. The colour is a yellowish umber-brown, with a narrow border of dull reddish brown; the whole surface covered over with irregular markings and freckles of dark umber-brown.

SPINE-TAILED ELIPESURUS.

Elipesurus spinicauda.

PLATE XXIII.

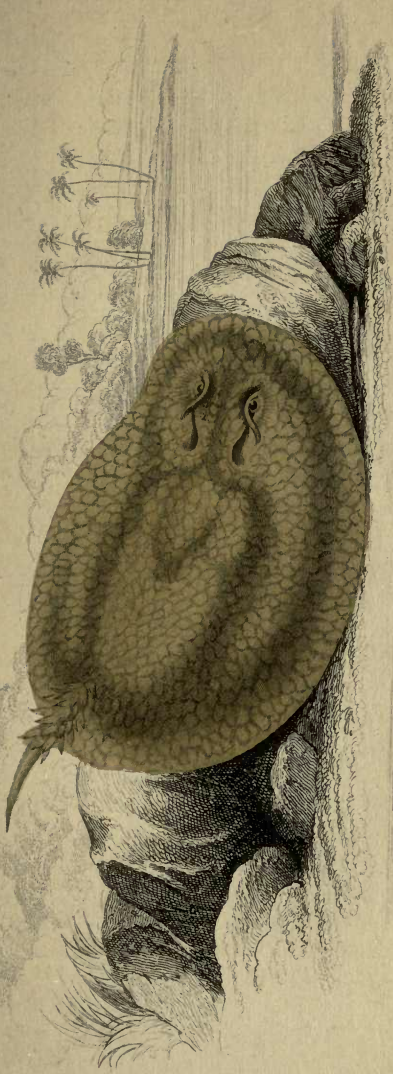
Schomb. Drawings, No. 36.

“ THIS ray was found in the Rio Branco at Fort San Joaquin, and here it is called *Naree-naree*; it was eighteen inches long, but very thin, and was without the horny spine which is generally found on this genus; a number of spiny excrescences cover the tail, which is much shorter than usual; it is of an ochreous colour; the eyes are prominent, and nostrils very large; like others of the species, they dig holes in the sand, in which they lie flat, and there await their prey. They are used for food, but are not preferred to others, and in the dry season, when other fish are plentiful, they are seldom killed. They are about eighteen inches by fourteen and a half or fifteen, in diameter.”

The form is altogether remarkable in the short or deficient tail, an organ among the rays which is generally in one way or other marked by considerable developments. These seem to be here confined to the strong spiny excrescences which cover its base,

Elipsesurus spinicauda,

Stewart del.





and are the only organs of defence with which the animal is furnished. The form of the body is more oval than those we have been examining; the colour is uniformly of a bright ochreous yellow, covered with a series of dark reticulated markings.

These conclude the drawings which were entrusted to our care by Mr. Schomburgk, and from them and the contents of these volumes generally, some idea will have been gained of the forms of the fishes which inhabit the rivers of the northern parts of South America; but although many of them have been considered as new to science, a very large proportion indeed, when it is considered that Ichthyology was, as it were, only a secondary object with our traveller, we consider that there are still ample stores of novelty. In such an extent of water as that which flows in those mighty streams, the excursions of all the travellers who have yet traversed parts of them are as nothing; hundreds of fishes are yet unknown, and thousands of living creatures, of remarkable forms and structure, still remain to reward the zeal and energy of the naturalist who will trust himself amidst the privations incident to such expeditions, or will brave the severity of climate and the pest of some of the minor classes of these beings. “On peut executer sur l'Amazon, le Rio Negro, et l'Oronoque au naviga-

tion non interrompue de 1400 lieus sans sortir du domain des etablismens monastiques," writes Humboldt; and what a field is there not here, without crossing the boundary from comparative civilization, for every species of investigation. Again, the same author states, "Le Cassiquare, par exemple, forme une ligne navigable entre deux bassins de rivières (l'Amazone et l'Oronoque) dans l'area est a 190,000 lieues-carrees. La temperature, la profondeur, et la vitesse des eaux, leur limpidite, leur propriétés chimiques le lit des fleuves tantôt bossux, tantôt rempli d'écueils influent puissant sur l'organization animale." If arrangements can be made to exceed these bounds, and to trace these rivers to their sources, there is another as extensive field entered upon, and ground altogether unbroken to be surveyed. The dangers and difficulties are undoubtedly great, but the rewards just as undoubtedly certain. After making these remarks, and before closing the volume, we have thought it right to bring together a few of the species observed by Humboldt and more lately by D'Orbigny, and which do not seem to have occurred to Mr. Schomburgk; so that as little of our present knowledge as possible may be withheld from future investigators; and we shall take them in the order which has been already followed.

Among the Loricarinæ and Siluridæ, with which we commenced our first volume, we introduced a short notice of most of the allied fishes which should

come among them; but in the Transactions of the Wernerian Society, there is a description and figure of a Silurus which does not seem to be alluded to in the volumes of Valenciennes. Dr. Trail has obligingly furnished us with his original notes and drawing, and a copy from the latter is now introduced.

PLATE XXIV.

This species will range among the rocks at Larnach; at the same time, we have kept the generic name which Dr. Trail applied. His description is as follows:—It would appear to be a common species in the sandy waters of the river of Larnach; that they mingle with the sea; and it is found at a considerable distance from the coast. When reared, it is used as an article of food. When reared, the specimen measured, in length, three feet four inches; at the circumference of the first dorsal fin, one foot eleven inches; and it weighed twenty-seven pounds.

"The true Dutch name is undoubtedly *Glabrus*, or yellow-belly. The upper parts are of a fine olive green; the sides and belly of a rich yellow. The body is thickest at the first dorsal fin; and the section there would be nearly circular. It tapers quickly, yet equally, towards the tail, where it is slender; the head is broad, flat, and compressed. The vertex is defended by a rough, bony plate of considerable

PARKER'S SILURUS.

Silurus Parkerii. TRAIL.

PLATE XXIV.

Silurus Parkerii, Dr. Trail, Trans. Wern. Soc. vol. vi. p. 366.

THIS species will range among the *Bagri* or *Pimelodi*; at the same time, we have kept the generic name which Dr. Trail applied. His description is as follows:—"It would appear to be a common species in the muddy waters of the rivers of Guiana where they mingle with the sea; and it is found at a considerable distance from the coast. When taken, it is used as an article of food. When received, the specimen measured, in length, three feet four inches; at the circumference of the first dorsal fin, one foot eleven inches; and it weighed twenty-seven pounds.

"The true Dutch name is undoubtedly *Geelbrick*, or yellow-belly. The upper parts are of a fine olive-green; the sides and belly of a rich yellow. The body is thickest at the first dorsal fin; and its section there would be nearly circular. It tapers quickly, yet equally, towards the tail, where it is slender; the head is broad, flat, and compressed. The vertex is defended by a rough bony plate of considerable



Silurus Parkeri.



firmness, which sends off two posterior appendices towards the upper part of the branchial apertures ; the middle of its posterior margin is notched to receive the apex of a very strong heart-shaped bone, the lobes of which reach the base of the dorsal fin. This shield or plate is rough, with bony granulations, of a larger size than those of the armour of the head, and is obtrusely carinated towards its posterior part.

“ The head is very broad ; the mouth is wide, terminal, and furnished with numerous minute teeth, which are rather intended for holding fast, than biting the prey of the animal. These teeth are thickly placed on the edges of the mouth, in such a manner as to resemble the hairs of a very stiff brush. They are arranged in two groups about half an inch wide, on each jaw, reaching along the whole aperture of the mouth, and are divided in front by a single furrow. Two convex, oblong bones, of considerable size, and furnished with similar teeth, form the osseous palate of the fish. The eyes are small, placed rather above the line of the mouth, and more than an inch and a half from its angles. There are six tentacula or cirrhi on the lips. The longest pair are on the upper jaw, very near the angles of the mouth, and measure full eight inches in length. The next pair are more than an inch below the lower jaw-bone, and measure four inches and a half. The shorter pair are placed near the middle of the lower jaw, and measure two inches and a half.

“ The first ray of pectoral and first dorsal fins con-

sists of a strong and slightly incurvated bony spine, with a rough granular surface and a serrated concave edge; the sharp apices of these spines form powerful weapons of offence and defence for the naked body of the fish. The pectoral spine is a little more curved than that of the dorsal fins: all of these spines are moveable, apparently by means of strong muscles. The length of the dorsal spine is six inches and a half, that of the pectoral spines nearly six inches. Besides its bony spine, there are seven rays in the first dorsal fin; but there are no rays in the second, which is adipose, but not very thick. The number of rays in each pectoral fin, exclusive of the spine, is eleven. The two ventral fins are three inches apart, and each of them seems to have six rays. The ventral and anal fins have a deep red colour in the recent fish; the latter has eighteen rays. The tail is deeply forked, and has thirty rays. The lateral line is slightly waved; the air-bladder lies below the heart-shaped bony shield, and is attached to the first vertebra." It was named by Dr. Trail in honour of Charles S. Parker, Esq. of Liverpool.

PRISTIGASTER..

Among our drawings, there were few which had been arranged by any ichthyologists among the Clupeadæ, a very great proportion of which are marine in their habits. The only genus included in the Brazilian fishes which has any claim is a remarkable one, destitute entirely of ventral fins, and having the ridge of the belly furnished with a line of prominent serrated processes, from which the generic name of *Pristigaster* has been given. The fish represented is the *P. Martii*, Agass. It is a small herring-formed fish, with the belly round and much protruding, and lined with the serratures which appear like a fringe; the anal fin unusually long. The back and upper part of the fish is bluish grey, shading into silvery white; the scaling very large; length of the fish, three inches. The genus will be always distinguished by the abdominal processes and the want of the ventral fins. It was found in the mouths of the river Amazon. Formula of the fins,

D. 3/12—P. 12—A. 48.

D'Orbigny has figured another fish, under the same generic name, *P. flavipennis*, having very

small ventrals ; but having as yet no letter-press to this work, we have no information beyond the figure, which has also a rounded belly, though not so disproportionate, and strong serrated processes. The pectoral, dorsal, and caudal fins are tinted with yellow.

The *Salmonidæ*, in particular forms, as we have seen, appear rather extensively ; these, however, are none of them typical, and Humboldt, when alluding to the geographical distribution of fishes in those countries, remarks that "no species of *Salmo* inhabits the Andes which I have examined." *Anodus* and *Calceus* take the place of *Coregonus* and represent the Herriugs, while the deep-formed *Serrasalmones* and *Tetragonopteri* are analogous to the *Cyprini* and *Salmon Carps*, though much more voracious and formidably armed.

In addition to those we have noticed in the previous volume, there is introduced, in the Brazilian fishes, two species of *Anodus*, said to inhabit the rivers of Brazil. The one *A. elongatus*, a fish of considerable elegance, closely resembling in form some of the *Coregoni*, olive above shading into a golden colour ; also *A. latior*, likewise resembling some of the deeper formed European *Coregoni*, nearly of the same colours with the last, but with very small scaling. The second dorsal fin in both these fishes is fimbriated at its posterior apex.

HYDROCYON.

The genus *Hydrocyon* seems to exist in considerable abundance in many of the rivers, though few specimens were procured in Guiana;* and in the Brazilian fishes, *Raphiodon* of Agassiz takes its place. He has characterised it,

“*RAPHIODON, Agassiz.*—Caput parvum, compressissimum. Oculi magni laterales. Os maximum oblique descendens. Dentes validissimi, acutissime, cum minoribus alternantes, in ossibus intermaxillaribus minoribus marginem tantum anteriorem maxillæ superioris conformantibus, et in mandibula; ossa maxillaria superiora longa, angusta. Lateralia dentibus minoribus obsita. Lingua magna, prominens, apice libera. Apertura branchialis maxima. Membrana branchiostega radiis 4 gracilibus. Caput elongatum, compressum, squamis parvis abductum; abdomen acute carinatum sed non serratum. Pinnæ pectorales magnæ, ventrales parvæ, analis latissima.”

Both the specimens which are figured (but under the name of *Cyonodon*) have very strongly armed jaws and a wide mouth; the ventrals very small; while the anal fin covers more than a third of the lower line of the fish. In many of these we have some dark spot or other marking, as we have seen so frequently among the fishes from those parts of South America.

* See Vol. I. p. 257.

We have also several species of the genus *Saurus*, remarkable for their large reptile-looking head, furnished with numerous teeth. These are represented both in the Brazilian Fishes and by D'Orbigny ; but the genus is of more marine habits, frequenting the coasts, and the mouths of the rivers, which they appear to visit at certain periods, as stated of *L. longirostris*, probably for the purpose of spawning.

In addition to the drawings of Mr. Schomburgk, one or two which were not made under his immediate inspection, and for the accuracy of which he could not vouch, were also put into our hands ; one of these, a bold uncoloured sketch, so strongly resembles a fish figured by D'Orbigny, *Curimatus obtusidens*, that we think it right to give a figure from his Plate.



Blunt-toothed Curimatá.



BLUNT-TOOTHED CURIMATA.

Curimatus obtusidens, D'ORBIGNY.

PLATE XXV.

Curimatus obtusidens, D'Orbig. Atlas, pl. 8.

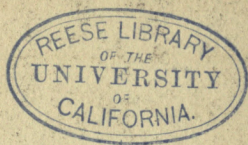
Two species are placed by D'Orbigny, armed with strong teeth, and distinguished by these weapons being in the one sharp-pointed, in the other blunt. They seem to stand near to *Characinus*, but having no characters or descriptions, we do not know the modifications of form or the views which D'Orbigny takes of their situation. The fish we have represented is of a rather elegant salmon-form, is coloured greyish above, shading into silvery, the lower fins being yellow; but it is chiefly conspicuous by three oval dark spots placed on the lateral line, the first below the dorsal fin, the last on the insertion of the tail. The species named *acutidens* is nearly of the same colours, but the head is more disproportionally large, and the body is deeper from the dorsal fin downwards; the lateral line is also marked with three spots, somewhat similar, though slightly differing in their position.

Upon the same Plate we have also the figure of a fish to which the generic name *Pacu* is applied, *P. lineatus*; it will range apparently among the salmon carps or *Prochilodi*; it is a handsome species, olive shading to silvery, and it is marked longitudinally with twelve dark narrow lines. The colouring may have perhaps been somewhat lost in transportation.

In the genus *Cychla*, and in that form to which we have considered it as more particularly restricted, we have seen that the rivers of Guiana were particularly rich; a single species of this form is represented in the Brazilian Fishes,



Cyclia monoculus.



SINGLE-OCCELLATED CYCHLA.

Cychla monoculus, AGASSIZ.

PLATE XXVI.

Cychla monoculus, Agass. Spix, Pisc. Bras. tab. lxiij. p. 100.

AND we have been induced to give a figure of it as a marine species, if it should eventually be found to continue generically associated with those of the rivers. No information is given respecting it, whether it occasionally or at certain times enters the rivers; "*Habitat in Mari Brasilicæ*" is all our information. The form appears to agree; the ground colour, above olive shading into reddish yellow, is marked with the usual bands, and there is a single ocellated spot on the base of the tail, carrying through also that kind of spotting. Formula of the fins,

D. 15/16—P. 15—V. 6—A. 3/11—C. 5/13/5.

In the second volume of Humboldt's Zoological Researches, three species of *Cychla* are described, from the Orinoco, which seem all distinct from the

drawings we have had under examination, though they are characterised by similar bands and ocellated spots; one of these, of very rich colouring, has been represented, and we now give a copy from the figure.

SINGLE OCELLATED CYCLIA

Cydia punctata, Guianensis

PLATE XXVI

From we have been induced to give a figure of it as a new species. It is allied essentially to those of the same genus generally, and with those of the same. The illustration is given respecting it, whether it is occasionally or at certain times within the river. It is in "West Indian" in all our collections. The form appears to agree; the ground colour above showing like reddish yellow, is marked with the usual bands and there is a single ocellated spot on the base of the tail, even from through the hind of the body. The form of the tail is the same.

PLATE XXVI. F. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

In the second volume of Humboldt's *Natural History*, there are several species of *Cydia* are described, from the Guianas, which were all distinct from the



Cichla Orinocensis.



CYCHLA OF THE ORONOCO.

Cychla Orinocensis, HUMBOLDT.

PLATE XXVII.

Cychla Orinocensis, le Pavon du Rio Negro, Humb. Zool. Obs.
ii. p. 167, pl. xlv.

“ C'EST le plus beau poisson de rivières que nous ayons vu. Il atteint de 1 a 3 pieds de longueur, et appartient à la famille des percoides à dorsale unique et continue. Les taches blues, bordées d'un cercle d'or, brillent du plus vif éclat. Elles rappellent, comme indique le nom Espanol de ce poisson, les yeux de la que du paon. En examinant avec un loupe les ecailles qui forment les zones blues et dorées, on est frappé de cette action particuliere des vaisseaux qui traversent les écailles, et dans lesquelles le pigment qui forme les zones de la tache se depose vers la pointe, vers le milieu, ou vers la base, selon que l'exige le contour de la figure entiere. Quelle est cette action chimique (voltaique) que semble émaner d'un centre commun? Se fluide qui circule dans un même vaisseau prend il des teintes différentes, selon l'influence locale des parois et des tégumens de ces vaisseaux, ou chaque pigment est-il déposé par des organes

particulieres ? Ces mêmes questions de physiologie se presentent lorsqu'on examine les taches à bandes concentriques formées par la poil de quelques mammifères carnivores, et par le bosses de plumes des oiseaux, surtout du *Phasianus argus*, du *P. pictus*, et des oiseaux de proie nocturnes."

The Baron adds, that he had frequently eaten this fish on the banks of the Oronoco and Rio Negro; and that it proved an agreeable food. It was named by the Caridaquere Indians "Saupa." The temperature of the Rio Negro was at this time 24° of the Centigrade thermometer.

Other two species are slightly described, from the rivers in the same districts, and names were at the time imposed upon them in reference to the parts where they were much sought after by the indigenous Indians as an agreeable food.

C. ATABAPENSIS, *Pocon du Rio Atabasso*, is found in those parts of the Oronoco where the waters are not thick or muddy; but the varieties having the finest flavour are those of the river Atabasso, where the waters are dark and chrystalline. It is of the same form with the last; but, instead of the four spots, has four very large transverse bands, of a bluish black, bordered with golden.—It is added in a note that M. Valenciennes supposes with propriety that the *C. atabapensis* is the *C. ocellaris* of Schneider. The comparison of our copy of Schneider's plate with the above short descriptive characters, may help this decision. The other species is,

C. TEMENSIS. *Poron du Temi*. Of the same form, without transverse bands, but with four rows of small yellow spots. A single very large spot upon the tail.

Among the drawings alluded to as not made under the superintendence of Mr. Schomburgk, we have a slightly coloured sketch, which we wish to introduce for the sake of recording and drawing attention to the form.

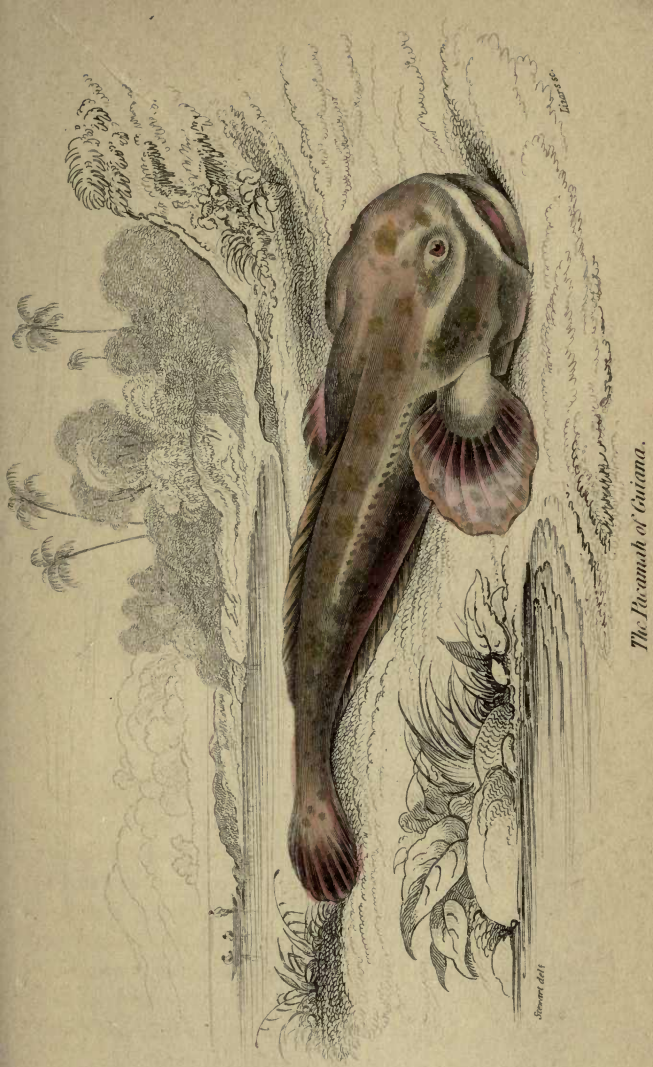
THE PACAMAH OF GUIANA.

Lophius? pacamah.

PLATE XXVIII.

THE drawing approaches nearer to the form of *Lophius* than any other, though we have no traces of the long filaments on the anterior part of the head, neither of a first dorsal fin. The drawing is of a uniform olive, blotched with a darker shade; the pectoral fins represented disproportionately large. The provincial or native name, by which it may be again recognized, is that which we have provisionally applied as a specific title, "*Pacamah.*" Perhaps it may range with *Batrarchus*.

With the exception of the "*Voyage dans l'Amerique Meridionale*" of D'Orbigny, where unfortunately we have not yet the letter-press which is to accompany the Plates, we have a greater number of species noticed in the two volumes of Zoological Researches by the Baron Humboldt than by any other author; many of them did not occur to our traveller within the range which he took, and although several of them are beyond the limits which



The Paramah of Guiana.



the title of our volumes indicate, a short summary of them, taken from the two volumes alluded to, and particularly from the memoir entitled "Recherches sur les Poissons Fleuvatiles de l'Amerique Meridionale," may be useful.

In writing of the distribution of fishes, and comparing that of South America with the Alpine parts of Europe, he remarks, "no species of *Salmo* inhabits any parts of the Andes which I have examined; the last fishes which are met with in the rivulets and lakes, at 1400, or 1600 toises, are of the genus *Pæcilia*, *Pimelodus*, and two genera of a very remarkable form, *Eremophilus* and *Astroblepus*; at 1800 or 1900 toises the Alpine lakes under the equator no longer contain fishes; and he does not attribute this fact to the ice which covers the lakes, for the Laguna de Mica, on the plain of Antisana, east of Quito, at an elevation of 2100, is free from ice almost at all seasons; yet, if we understand the Baron correctly, it is destitute of fishes.

Near Santa-Fe de Bogota, a small fish was procured, under the native name of *Guapucha*. It was found, perhaps exclusively, at an elevation of 1360 toises above the level of the sea, in the cool waters of the little stream Bogota, which traverses the plateau of Santa-Fe, and precipitating itself by the celebrated Fall of Tequendama, mingles its waters under the name of Rio Tocama, with those of the Magdalena. The species is referred by Valenciennes to the genus *Pecilia*, Cuv., a group of small fishes inhabiting the fresh-waters of South America, characterised by

a depressed head, and the muzzle, as it were, in the shape of an angle, and by having five rays to the gill membrane; the body is compressed and covered with rather large scales, which occur also on the head and opercula, which are without either spines or denticulations; and several of the species are known to be viviparous. Humboldt has named his species *P. Bogotensis*, from three to four inches long, of a yellowish green, with a longitudinal silvery stripe running nearly along the centre of the body; the tail bifid; swimming-bladder double. In addition, Valenciennes mentions another species from the fresh waters of Brazil, about two inches in length, of a dull green, yellowish beneath, and marked on each side with a black spot, anterior to the dorsal fin.

A single species of the genus *Fundulus*, Lacep., is considered to inhabit the fresh waters of Brazil, *F. Braziliensis*, Valenc. In this genus the dorsal and anal fins are opposite; the teeth, many on each lip, setaceous; gill-membrane with four rays. By some it has been placed among the *Esoces*. The genus is chiefly North American, the type *Cobitis heteroclita*, Linn.

A fine species, CURIMATUS AMAZONUM, *Le Boquichico de l'Amazone*, was taken in the High Maragnon, opposite the cataract of Keetema, at an elevation of 200 toises. This species Valenciennes considers very nearly allied to the *Salmo edentulus*, Bloch., which he places in the same genus. Humboldt's fish is of a greenish white, silvery; with large,

round, and loose scales; no teeth. Length about seventeen inches. Formula of the fins,

D. 8/10—P. 14—V. 9—C. 20—Br. 4.

As elsewhere in these regions, the Siluridæ seem to have been frequent; one large species is described and figured, and four others are slightly indicated, all differing, with perhaps one exception, from those which we have already described.

PIMELODUS ZUNGARO. *Le Zungaro de l'Amazone*. It was found in the Amazon near to Tomependa, and was said by the natives, who use it as food, to reach a size of six or seven feet in length. It possesses two dorsal fins; is of an olive colour, marked all over with black spots, and is furnished with six cirrhi,—two on the upper, four on the lower jaw. The fin formula is given,

1st D. 7; 2d D. adip.—P. 13—V. 10—A. 10—C. 22—Br. 4.

A species of *Serra-salmo*, of considerable size, is described under the name of “*Le poisson Caribe de l'Oronoque* ;” it approaches nearest to the *S. piranha* of the previous volume, being pale coloured, the back and dorsal fin greenish, the ventral and anal fins orange. In manners it agrees with *S. niger*; the observations of Humboldt confirming those of Mr. Schomburgk in regard to the rapacious habits of several of the genus, which attack, not only animals, but the natives, while bathing and swimming, “*emportant des morceaux de chair considerables.*”

Humboldt also met with the *pacu*, perhaps one of those described by Schomburgk; it is styled "Le paco de l'Amazone," *myletes pacu*. The form compressed, the outline of the back arched; the colour greenish white, the body covered with small scales. He confirms the accounts of the exquisite flavour which these fish are said to possess, although the accessory ribs are numerous and troublesome.



Linnæus 50

The Guavina of Ticarigua.

Stewart del.



THE GUAVINA OF TACARIGUA.

Erythrinnus guarina, HUMBOLDT.

PLATE XXIX.

A SPECIES of *Erythrinnus*, or of a fish allied somewhat to it, was procured in Lake Valencia or Tacarigua, at an elevation of 220 toises above the sea. It is named provisionally *Erythrinnus guarina*; but M. Valenciennes, in his Notes, seems to have some hesitation in referring it to the old genus, thinking that it may form the type of one entirely new. It is a remarkable species, extremely voracious; the teeth pointed, stand in an arrangement of one large, with a smaller on each side, or to appearance, in the sketch, of a tricuspid tooth; under the throat there is a loose fleshy dependent membrane, of which the use is not hinted at; the scales large, round, and loosely imbricated, the centre and margins olive. It is about twenty inches in length. The colours are said to be a silvery yellow, the fins green, and in the Plate these are represented as barred narrowly and transversely with a darker shade. It is said to be the prey of a large Saurian reptile called, by the native inhabitants, *Bava*. We have thought it would assist researches by giving a figure from Humboldt's representation of this curious fish, and would also invite attention to the large Saurian.

A fish from the Laguno de Colluca, which Baron Humboldt was assured was of fresh-water, is referred by Valenciennes to the *Spare Breton* of Lacépède, and named *Smaris lineatus*,—"White; the back greenish; the body with eight or nine longitudinal bands." It is provincially named *Moxara*, but there appears to be a little doubt whether the lake, not far distant, is entirely without communication with the sea.

These are the principal species mentioned in the paper by Humboldt previously alluded to; but we have yet to notice the remarkable form *Eremophilus*, a fish supposed to belong to the family of the Loaches, but regarding which M. Valenciennes has expressed his views in a paper added to the second volume of the "Reserches."



1 Unarmed Eremophilus 2 Pimelodus of the Volcanos.



UNARMED EREMOPHILUS.

Eremophilus mutisii, HUMBOLDT.

PLATE XXX. FIG. 1.

Eremophilus mutisii, Capitaine de Bogota, Humb. Obs. Zool.
i. p. 17 ; Valen. ii. 341.

THE EREMOPHILUS was discovered by Humboldt in the little river Bogota, which forms the famous cataract of Tequendama, in the kingdom of New Grenada, at an elevation of 1347 toises ; and is named as above, as a record of the solitude which reigns at these great elevations, and in the waters, which are scarcely inhabited by any other living creature. M. Valenciennes having examined specimens from the same localities, afterwards procured for him by the interest of M. Humboldt, has considered this fish as belonging to the Siluridæ, representing an unarmed form among them. Our figure will give an idea of the form of this singular fish ; the body is covered with a strong mucus ; the colour is a greyish blue, spotted with olive-green ; these spots, of an undulated form, are in some species of a yellowish tint ; the head is flattened ; and the mouth, placed at the extremity of the snout, is narrow ; the upper lip, lengthened and folded, exceeds the

under, and is furnished with six fleshy barbules, of which the exterior are longest; two others, short and partly tubular, are placed above the nostrils; the extremity of the lips furnished with hair-like teeth; the eyes very small, and covered with a semi-transparent membrane, as in the *Gymnoti* and *Murenæ*. The length of this fish is from ten to twelve inches. It forms an agreeable aliment, and is eaten by the inhabitants of the capital of Santa-Fe during Lent. M. Valenciennes adds, regarding its internal structure, which appeared not to be easily made out from the state of his specimens, that the intestinal canal was simple, long, folded four times upon itself, and having numerous bands between each fold; the œsophagus and stomach firm, a long tube which occupies three-fourths of abdominal cavity. There is no swimming-bladder. The formula of the fins is,

D. 4/11—P. 9—A. 3—C. 11/13/12—Br. 6.

Another fish, very nearly allied, has been procured by Valenciennes from the vicinity of Rio Janeiro.

A very curious fish was also discovered in the little river Palacé, near to Passayan, to which M. Humboldt has given the name of *Astroblepus grixelarii*; Valenciennes, though he had not seen additional specimens, considered that it also belongs to the Silurian family: a very short description is given of this species. The length of Humboldt's specimen is about fourteen inches; the colour is blackish olive, ♀ form, particularly that of the head, rather broad

and flat ; the eyes, as indicated by the name, placed vertically, and very small ; the mouth terminal, having a barbule at each angle ; all the fins having the first ray lengthened to a short filament, which is also the case with the two exterior rays of the tail. The formula of the fins is,

P. 10—A. 7—C. 12—Br. 4.

Another fish, having very remarkable facts attached to its history, is also described by this great traveller ; and we are not aware that subsequent researches have thrown **any** further light upon its history ; it is

THE PIMELODUS OF THE VOLCANOS.

Pimelodus cyclopus, HUMBOLDT.

PLATE XXX. FIG. 2.

THIS small species, about four inches in length (a variety appearing scarcely to exceed two inches), is found in the rivulets and lakes in the kingdom of Quito, at an elevation of 1700 toises, and where the temperature of the water is about 10° of the Centegrade thermometer. It is of an olive colour, marked with small dark spots; the mouth large, is terminal, and is furnished with two barbules on the upper jaw; the eyes, very small, are placed in the middle of the head; and the skin is covered with a thick and strong mucus. It is occasionally eaten, but only by the lower classes of Indians, the mucosity of the skin rendering it very disgusting. The formula of the fins is,

1st D. 6—P. 9—V. 5—A. 7—C. 12—Br. 4.

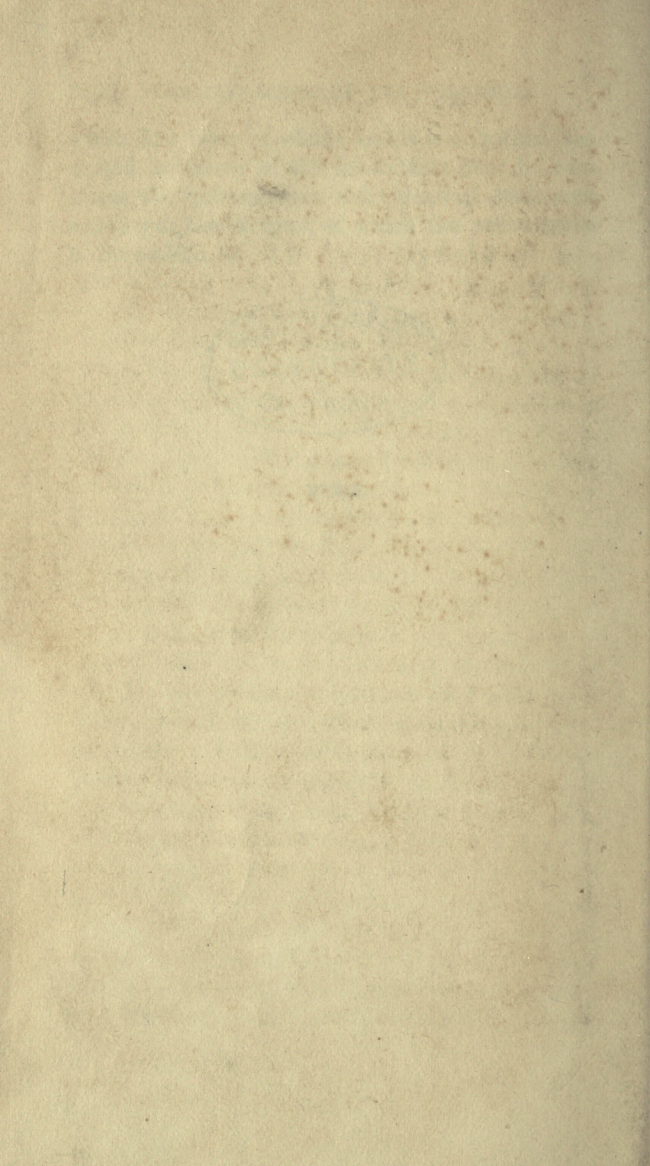
The singular fact in the history of this fish is, that from the volcanos in the vicinity it is, during the periodical eruptions, discharged in thousands; and in a state so perfect, as to show little muti-

lation either from scorching or from the effects of the hot water with which it is discharged. Baron Humboldt states, that in turning over the records kept by the small villages in the vicinity of Coto-paxi, he found mentioned, that, on the lands of the Marquis Selvalègre, so large a quantity was thrown, that a putrid odour was spread over the country. The almost extinct volcano of Imbaburu, in 1691, discharged thousands over the plains surrounding the village of Ibarra, and to the miasmita which occurred from them, fevers were attributed ; and from another volcano, in 1698, thousands were also thrown, encased in arguaceous balls. Humboldt is of opinion that these volcanos contain subterranean lakes, from whence the supply is afforded, the numbers in the little rivulets around being comparatively small ; he adds, many of these rivulets may communicate with these subterranean caverns ; and, that the first Pimelodi which have stocked them must have ascended against the stream. In supposing this to account for the numbers destroyed by eruptions, we must conceive their producers to be very abundant. Does the spawn and the young also, in part at least, afford nourishment to the adults ? or in what manner does a fish supposed to have been indigenous to the open streams support itself in these subterranean abodes ? or has it been the reverse, and have the “ waters under the earth ” supplied the comparatively few specimens which exist in the small streams ? We do not gather from the text that Humboldt saw specimens of the fish

which had been expelled; and it is only from the united testimony of the inhabitants that he considers the snbterranean fish identical with that existing in the streams, of which the native name is *Prenadella*.



FINTS.



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